Understanding business strategy factors that support or impede moving business capabilities to a cloud environment

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By

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Abbreviations and Acronyms

CIO	Chief Information Officer
CIO1	Chief Information Officer
CIO2	Chief Information Officer
CIO3	Chief Information Officer
CTO	Chief Technology Officer
CTO1	Chief Technology Officer
HOD1	Head: IT Strategy & Architecture
HOD2	Head of IT
HOD3	Head of IT
HOD4	Head of IT
IaaS	Infrastructure as a Service
IT	Information Technology
ITA1	Enterprise Portfolio Architect
ITE1	Information Technology Executive
ITM1	Information Technology Manager
NIST	National Institute of Standards and Technology
ORG1	Organisation
ORG2	Organisation
ORG3	Organisation
ORG4	Organisation
ORG5	Organisation
ORG6	Organisation
ORG7	Organisation
PaaS	Platform as a Service
SA	South Africa
SaaS	Software as a Service
SLA	Service Level Agreement
UCT	University of Cape Town

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Publications based on this research

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Abstract

Organisations are facing increased competition in contemporary business environments. At the same time, cloud computing is a catalyst for new software applications and services available to organisations. Therefore, cloud computing is a viable option to provide innovation within the organisation. Therefore, organisations need to recognise the potential transformation of its business model, to take advantage of cloud computing. This research sets out to describe and explain the relationship between the various business strategy factors and CC.

Organisations have to guard against using cloud-computing capabilities only to provide organisational efficiencies, as the efficiencies gained do not always translate into business value. Adopting cloud computing can cause disruptions in the organisation. Therefore, the organisation needs a strategy and understand the relationship between the business strategy and the cloud computing options available.

The present study performs multi-method qualitative research, within the South African context. By taking a constructivist view, the researcher believes the knowledge will emerge from the interaction the people have with their environment. The research purpose states the research as descriptive and explanatory. Data collection for the present study performs face-to-face interviews. A general-interview-guided approach ensures the research covers same areas of interest in all the interviews. For the data analysis, the researcher uses an inductive thematic analysis method.

Software-as-a-Service influences the customer behaviour and forces organisations to re-evaluate their use of cloud computing. However, new cloud computing capabilities brought into the organisation need to provide a value proposition with an expected time-to-market. Also, large organisations require a technology architecture review to assess the impact on their infrastructure. The multi-faceted cost structure coupled with legacy systems and legacy investment products can prevent the adoption of cloud computing. Another factor is the vendor relationship and their influence regarding the solutions into which an organisation invests.

The present study concludes how cloud computing offers no competitive differentiation for South African investment services organisations. For these organisations, their existing business models remains profitable. Business strategy, therefore, has no compelling reason to consider cloud computing. Furthermore, information technology is a utility service. For these organisations, the information technology and business strategy align through the service-level method. This alignment method forces the information technology department to focus on maintaining a stable and reliable infrastructure. Cloud computing is only considered when contributing to the service-level. A misalignment then follows, and individual business units adopt cloud computing to fulfil their business need. As a result, the business unit is ready to adopt cloud computing while the information technology department is a hindrance towards adopting cloud computing. Software-as-a-Service solutions are the most used cloud computing option, based on its ability to offer an accelerated time-to-market for proof-of-concept products and services. However, most final business solutions move onto the internal infrastructure of the organisation. Platform-as-a-Service and Infrastructure-as-a-Service are used to a lesser degree by organisations in this study.

1. Introduction

Organisations are recognising how the business environment is changing into one, which is service driven, information-based, and knowledge-intensive (Bartlett & Ghoshal, 2002). The omnipresence of broadband networks gives rise to the mobile workforce, which allows collaboration to achieve new heights (Brender & Markov, 2013). Business strategy is therefore crucial when considering information technology (IT) investment, to ensure maximum rewards and higher performance (Lu & Ramamurthy, 2011). Cloud computing (CC) is recognised as an option for providing an excellent opportunity for innovation and investment (Low, Chen, & Wu, 2011). The growth experienced by CC makes it a viable alternative, compared to the existing IT infrastructure that exists within organisations (Brender & Markov, 2013).

CC provides access to a shared group of computing resources, which is available on-demand through network access. This resource availability changes the way IT can provide organisations with a competitive edge, given the challenges in the current turbulent business environments. Based on the business requirements, CC allows the consumer to provision and release computing resources, befittingly, with no interaction with the service provider (Mell & Grance, 2011). These computing resources are available through hardware and system applications in data centres, which the provider of the service may not own (Armbrust et al., 2010). By using CC, the organisation has new techniques to procure, develop, and deploy software applications and services (Khajeh-Hosseini, Greenwood, Smith, & Sommerville, 2012).

Achieving business value through IT is a concern due to IT research lacking focus on the business environment and thus limiting the knowledge regarding a process to achieve such value (Chen et al., 2014). Within the South African context, organisations base their CC response to the perceived cloud adoption success of other organisations (Cohen, Mou, & Trope, 2014). However, the lack of proper planning can lead to an IT solution, which is a disabler and even impede the performance of an organisation (Lu & Ramamurthy, 2011). Organisational impact of CC, on various stakeholders, need understanding since various issues could affect the organisation (Marston, Li, Bandyopadhyay, Zhang, & Ghalsasi, 2011). Organisational culture is another major obstacle when adopting CC coupled with the organisational awareness of regulatory compliance, data location, security, and privacy (Brender & Markov, 2013). Thus deploying an efficient IT solution, does not guarantee benefits realisation. Instead, it relies on the social network, which exists to provide the human motivation and social interaction to benefit from the IT solution (Bartlett & Ghoshal, 2002).

This study aims to describe and explain the relationship, which may exist between the various business strategy factors and CC. To achieve this, the researcher will consider the relationship between the attributes of CC and that of business strategy and competitiveness. A study by Lu and Ramamurthy (2011) shows an organisation needs to adapt to changes in their business environment and ensure IT is an enabler for the organisation. Garrison, Kim, and Wakefield (2012) however show that improving IT efficiency, through CC, does not provide an organisation with a competitive advantage. Also, Zott, Amit, and Massa (2011) show how the use of an IT solution does not guarantee greater organisational performance. While Chen et al. (2014) emphasise the need for studies, which aims to understand the relationship between organisational performance and IT capability.

1.1. Objectives and Questions

This research describes the business strategy factors, considered by an organisation. This research aims to explain any relationship which may exist between the identified business strategy factors and CC. Given this goal, the main topic of this research is formulated as:

"Understanding business strategy factors that support or impede moving business capabilities to a cloud environment."

Using IT does not guarantee a higher business performance of an organisation. This lack of guarantee stems from IT solutions holding no inherent value but instead depend on the effective use of IT within the organisation (Zott et al., 2011). Some organisations only implement new IT solutions, by using CC, to improve efficiency, which might not translate into business value. Such IT implementations can be perilous since having an IT efficient organisation does not differentiate an organisation, and competitors can replicate any gained efficiency (Garrison et al., 2012). CC provides an organisation with new methods of procurement, development, and deployment of software applications and services (Khajeh-Hosseini et al., 2012). Based on this explanation, the present study attempts to describe and explain the relationship, which exists between business strategy and CC.

1.1.1. Objectives

The primary objective of this research is:

1. Describe the role and potential of cloud computing, and its relationship to business strategy in the South African investment industry.

The following literature supports this objective.

Shifts in technology can affect business models and therefore requires the organisation to understand the relationship between IT, business innovation, and business survival (Tongur & Engwall, 2014). The business model, of the organisation, requires transformation to accommodate IT. CC is one such form of IT and influences factors such as leadership style, organisation culture, and market position (Khanagha, Volberda, & Oshri, 2014). Thus, the business strategy should integrate into CC to support the organisation with the potential disruptions that may arise (Werfs, Baxter, Allison, & Sommerville, 2013).

1.1.2. Research Question

This research will attempt to answer the following primary question:

What type of relationship exists between the business strategy of an organisation and the cloud computing options available?

According to Yang and Tate (2012), CC could require a paradigm shift in the method of IT delivery and challenge traditional IT management issues. Given this, Yang and Tate (2012, p.48) suggest that future research should aim to answer questions such as "How does CC impact current practices of IT management and governance? Does cloud computing improve IT business alignment and IT agility? What are the critical factors of a successful business model with cloud computing?"

Werfs et al. (2013) show how organisations require a strategy for CC. This thinking requires the organisation to recognise the strategic driver, the impact on business models, and new prerequisite skill sets of the people within the organisation. Some questions, which need answering, include "Why did the company want to use cloud computing? How does the company define cloud computing? Was it clear what capabilities are/would needed (to be) developed? Are customers willing to adopt cloud computing? Did cloud computing affect the response to changing customer needs or business requirements?" (Werfs et al., 2013, p. 54).

1.2. Summary of Chapter

Organisations recognise that CC provides excellent opportunities for innovation. This innovation potential is vital to organisations as they face challenges to stay competitive in contemporary business environments. However, within the South African context, organisations in the financial services industry appear to be copying the implementations of other organisations who have already adopted a CC solution (Cohen et al., 2014).

CC provides an organisation new ways to procure, produce, and deploy software applications and services. However, organisations should guard against using these new CC capabilities only to provide organisational efficiencies, as these efficiencies do not always translate into business value. Therefore, the business strategy of the organisation should recognise CC and the potential transformation of its business model to take advantage of CC. This transformation is necessary since adopting CC in an organisation may give rise to disruptions within the organisation.

It is therefore vital for the organisation to have a strategy for CC and understand the relationship, which may exist between the business strategy the organisation undertakes and the CC options available. The present research will attempt to describe and explain the relationship existing between CC and the business strategy the organisation undertakes.

1.3. Overview of dissertation

This section will explain the structure for the present study. Chapter-2 provides the literature review for the present study. It provides a background of CC and defines business strategy as understood in the present study. Next, the chapter describes IT-strategy, which allows reviewing some literature on the alignment between business and IT. The chapter proceeds to show some CC strategies for an organisation. In conclusion, the chapter reviews the literature on the organisational impact of any new technology introduced into an organisation.

Chapter-3 discusses the research design and method applied. This chapter presents the plan followed to perform this research. The first three sections describe the philosophy, approach, and purpose respectively. Next, the chapter addresses the research method and timeframe used in this study. A data collection section provides insight on the sample population, collection techniques, data validation, and assumptions made for this research. In the final two sections, of chapter-3, is a discussion about the research limitations followed by the confidentiality, ethics, and approvals this study required.

Chapter-4 describes the findings of this research. It starts by explaining how the present study has reached saturation. The organisational context section provides the context for this research. Next, the chapter provides an overview of the result of the present study. The chapter concludes by presenting the detail results and the sub-themes uncovered.

Chapter-5 discusses the results from chapter-4. Firstly, the research topic is unpacked, and relationships explained between the results in chapter-4 and the research topic. Secondly, the themes are taken from chapter-2 and relationships explained based on results in chapter-4.

Chapter-6 provides a conclusion and summarise the discoveries of the present study. Chapter-7 provides a list of all the past research papers which this study referenced while Chapter-8 provides a list of all the appendices.

2. Literature Review

This chapter presents the literature review performed for the present study. It starts by describing the difference between a business and an organisation. The section on CC background presents a definition of CC coupled with a view of how CC evolved over the past ten years. The chapter then continues by describing the business and IT strategies within organisations, which lays the foundation to review the literature on business and IT alignment within an organisation. Once understood, the chapter considers the strategic contributions of CC. The chapter concludes by considering the organisational impact of an IT implementation.

2.1. Distinguishing between Business and Organisation

For the present study, it is important to distinguish between business and organisation. A Business is the value proposition, being offered to a customer, enticing the customer to buy the product or service, and delivering the product or service to the target market (Teece, 2010). In comparison, an organisation is an underlying infrastructure enabling the realisation of the business, which comprises the people, systems, processes, and so forth (Fox, Barbuceanu, & Gruninger, 1996).

2.2. Cloud Computing Background

CC is a means of attaining access to a shared group of computing resources. These computing resources are available on-demand through network access. In addition, based on the business requirements, the consumer can provision or release the computing resources, with ease and minimal interaction with the service provider (Mell & Grance, 2011). The computing resources referred to, can be a software application or service delivered over the internet which runs on hardware and systems applications which exist in data centres that are, potentially, not owned or managed by the provider of the software application or service (Armbrust et al., 2010). The growth experienced by CC has made it an attractive alternative for organisations, compared to the existing IT infrastructure in their organisation. Also, the omnipresence of broadband networks has given rise to the mobile workforce, allowing collaboration to achieve new heights (Brender & Markov, 2013). Given the above promise of CC, organisations have shown interest in the technology underpinning CC.

2.2.1. Technical Characteristics

From a technical point of view, the characteristics of CC show it contains existing computing models which includes "network computing, grid computing, utility computing, pervasive computing, and service computing" (Lin & Chen, 2012). Another definition, describes CC as: "a model for enabling convenient, on-demand network access to a shared pool of configurable computing resources (e.g. networks, servers, storage, applications, and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction" (Mell & Grance, 2011).

2.2.2. Five Essential Characteristics

The NIST has identified five characteristics that describe a cloud-based solution, which comprises on-demand self-service, broad network access, resource pooling, rapid elasticity, and measured service.

On-demand Self-Service refers to the consumer provisioning CC resources with no human intervention by the cloud provider.

Broad Network Access is the ability to access the resources through standard mechanisms, making it available to a broad range of devices and platforms.

Resource Pooling implies that the provider can pool its resources to serve their consumers using a multi-tenant model. The consumer does not know the physical location and can specify resources at a higher-level of abstraction, for example, country, region, and data-centre.

Rapid Elasticity is the capability of the provider that allows the consumer the flexibility to provision and release resources depending on the needs of the consumer. The consumer can perform this at any time, and in any quantity required by the consumer.

Measured Service implies the provider has a transparent method for consumers to monitor, control, and report on the resources used by the consumer (Mell & Grance, 2011).

2.2.3. Deployment Models

The NIST further defines the CC deployment models available to organisations. **Private Cloud** is a CC infrastructure for exclusive use by a single organisation and may be located either on or off the premise of the organisation. An outsourced partner, the organisation itself, or a combination of the two performs the ownership, management, and operation. A **Community Cloud** is a CC infrastructure shared by a group of organisations with a common interest and may reside on or off premise. One or more organisations in the community are responsible for the ownership, management, and operation of the community cloud. The **Public Cloud** is available to the public in general, and the infrastructure resides with the cloud provider and is not managed, operated, or owned by the organisation. **Hybrid Cloud** is a combination of the previous models mentioned, and each model remains distinctly different. However, they enable the portability of data and applications using standardised or proprietary technologies (Mell & Grance, 2011).

2.2.4. Service Models

Service delivery places the CC delivery mechanism into three classes. These classes are Software as a Service (SaaS), Platform as a service (PaaS), or Infrastructure as a Service (IaaS). Each class of delivery provides a separate purpose to the organisation but shares the same business model of renting the CC service to the organisation. Furthermore, the organisation can choose from any one or a combination of these classes of delivery to utilise in their CC offering (Lin & Chen, 2012).

2.2.5. Evolution of Cloud Computing

Performing a literature search for the year 2006 yields no research papers when searching for the term “cloud computing”. However, there were ample research papers relating to grid computing and software-as-a-service, which forms part of CC. Towards the end of 2007, IT companies started using the term “cloud computing”. Markoff (2007) started using the term “cloud” to refer to the free software Microsoft released for its Windows user-base. Lohr (2007a) later announced an initiative in which Google and IBM offered free data centres to students to use for research purposes. Development and research capabilities were made available on these remote data centres, which were accessible via the internet. Lohr (2007b) later mentioned the release of IBM’s “Blue Cloud” initiative to promote CC within the corporate environments.

Once the concept of CC was coined, subsequent studies undertook to clarify CC. Subsequent research, therefore, had interest in detailing the ontology for CC, to understand the relevant components (Youseff, Butrico, & Da Silva, 2008). This unpacking of CC into its components led to a proposed architecture to indicate the allocation of resources and the exchange of services within a global market (Buyya, Yeo, & Venugopal, 2008). The relationship shifts were also addressed, to indicate how the role of IT vendors would evolve as customers move away from buying IT assets, and instead pay for services made available to them (Plummer, Bittman, Austin, Cearley, & Smith, 2008).

Changes in the relationship between customer and IT vendor spawned an interest in considering CC as a utility, based on research from previous years, which has a vision of computing becoming a utility. As a result, research focussed on cloud providers and how they would benefit from this new model of computing (Armbrust et al., 2009). This focus on cloud providers led to research on frameworks, which could enable organisations to port their could-based applications between cloud providers. Consequently, this highlighted the need for standards to enable interoperability (Grossman, 2009).

There is a sense the adoption of CC will expand, and developers need to recognise this. Awareness, therefore, needs to be placed on three areas of software development, namely Application Software, Infrastructure Software, and Hardware Systems (Armbrust et al., 2010). However, CC research is becoming very technology focused and requires a different perspective. One that focuses

on the various building blocks, the actors involved, and how this compares to the existing outsourcing models in existence (Leimeister, Böhm, Riedl, & Krcmar, 2010).

Frameworks and toolkits start to emerge to assist CC adopters. One such toolkit, named CloudSim, is meant to assist with modelling and simulating cloud extensibility (Calheiros, Ranjan, Beloglazov, De Rose, & Buyya, 2011). Meanwhile, the NIST provided a formal definition and framework for CC, which is widely cited by researchers. This definition outlines the characteristics of CC as well as service and deployment models (Mell & Grance, 2011). Given these developments in the field, the impact on various stakeholders requires identification to provide recommendations to businesses and academics (Marston et al., 2011).

Various architectural features become important as with the adoption of CC. Requirements start evolving for end-users, organisations using CC as a platform, and the cloud providers (Xu, 2012). Security challenges have also become more evident, which leads to research being conducted to provide solutions to these challenges (Zissis & Lekkas, 2012). The extensive data centres needed for CC also raises the concern around energy savings, and further research is performed to address these issues (Beloglazov, Abawajy, & Buyya, 2012).

As the adoption of CC increases in different areas, some interesting issues arise. Within the mobile computing space, issues were found concerning security and context-awareness. These issues surfaced at various levels namely; operational, end-user, services, and application (Fernando, Loke, & Rahayu, 2013). Other issues identified within mobile CC includes; low bandwidth, network access management, quality of service, interoperability, and finally service discovery and composition (Dinh, Lee, Niyato, & Wang, 2013). Within the Healthcare sector, CC is used to store personal health records with cloud providers raising the concern about privacy of these records. This privacy concern led to research of a security framework to share personal health records within a CC environment (Li, Yu, Zheng, Ren, & Lou, 2013). All of these factors meant that another framework was required to systematically rank cloud services based on various attributes (Garg, Versteeg, & Buyya, 2013).

Heterogeneity is being analysed, and taxonomy is developed. Mobile computing introduces challenges regarding heterogeneity when converging mobile and CC coupled with the networking that is required (Sanaei, Abolfazli, Gani, & Buyya, 2014). The adoption of CC within the automobile industry has given rise to vehicular clouds, and here security and privacy issues were raised again (Whaiduzzaman, Sookhak, Gani, & Buyya, 2014).

Studies were performed to understand the relationship between big data and CC. Here, a technology lens provided an understanding of issues such as scalability, availability, data integrity, and transformation (Hashem et al., 2015). However, the concern around security is still an important factor to research given the public, virtualised, and shared nature of CC (Ali, Khan, & Vasilakos, 2015).

Users have heterogeneous demands and need a platform where they could request their service demands (Zhang et al., 2016). As CC integrates into the internet-of-things, new challenges were uncovered which included heterogeneous devices and technologies (Botta, de Donato, Persico, & Pescapé, 2016).

2.2.6. Prior Research Recommendations

Given the existing body of knowledge around CC, prior researchers make some research recommendations. One such is recognising how there is a great need for interoperability between cloud vendors, and research is required to address legal and regulatory issues, which rise above technical issues (Buyya et al., 2008). The sustainability of CC requires further investigation given how CC is regarded as a disruptive technology, thus calling for analogies to be drawn from similar business and technical models (Leimeister et al., 2010). Studies also need to consider the energy efficiency and expenditure models for service providers, when allocating services to applications. This energy concern is due to the large amount of electrical power required for the data centres, which implies the capital expenditure and operational cost of running these data centres can be high (Calheiros et al., 2011). Organisational impact of CC on various stakeholders is another area, which needs further research since CC can give rise to various issues in the organisation (Marston et al., 2011). There is also a need for research, which addresses the evolving privacy, and trust issues related to using reference architectures, protocols, and models (Whaiduzzaman et al., 2014).

2.3. Defining Business Strategy

The present study requires a precise definition of business strategy. Porter presented two factors, which drives the competitive strategy of an organisation. First, there is the attractiveness of an industry and the factors, which determine long-term profitability. Second, there are determining factors of relative competitive position within the industry. The competitive strategy, therefore, requires the organisation to combine these factors (Porter, 2008). As a result, the present study uses the Porter industry structure, also known as the five forces of competition. This lens assists the study to focus on the factors an organisation would consider when competing in a target market. Following this, the section describes the relative position an organisation can take within its target market, compared to the existing competitors. The present study also considers the various strategy modes an organisation can undertake as defined by Porter. In conclusion, this section presents the considerations when thinking about the strategy of an organisational.

2.3.1. Industry Structure

The five forces for competition determine the profitability of any industry and consist of rivalry amongst existing competitors, entry of new competitors, the threat of substitutions, bargaining power of suppliers, and bargaining power of customers. All competitors can earn attractive returns where the pressures of these five forces are relatively even. Few competitors can earn attractive returns where the pressure is intense from one or more of the five forces. Industry profitability is therefore not a function of the product itself, but instead of the structure of the industry (Porter, 2008). The following table has been adapted from the Porter figure of the five competitive forces. Each row represents the different forces, while the columns represent the industry structure element, a description of the force, and the determining factors of the force.

Industry Structural Element	Force Description	Determining Factors
Customers	Bargaining power of customer	Bargaining Leverage 1. Buyer switching costs relative to firm switching cost 2. Ability to backwards integrate 3. Substitute products 4. Buyer concentration versus firm concentration 5. Buyer volume 6. Buyer information 7. Pull-through Price Sensitivity 1. Brand Identity 2. Product Differences 3. Impact on quality/performance 4. Price/total purchases 5. Buyer profits 6. Decision makers incentives
Suppliers	Bargaining power of suppliers	1. Switching cost of suppliers and firms in the industry 2. Differentiation of inputs 3. Presence of substitute inputs 4. Supplier concentration 5. Importance of volume to supplier 6. Cost relative to total purchase in the industry 7. Impact of inputs on cost or differentiation 8. The threat of forward integration relative to the threat of backward integration by firms in the industry

Industry Structural Element	Force Description	Determining Factors
New Entrants	Threat of new entrants	1. Brand Identity 2. Switching Cost 3. Proprietary product differences 4. Economies of scale 5. Capital Requirements 6. Access to distribution 7. Absolute cost advantages o Proprietary learning curve o Access to necessary inputs o Proprietary low-cost product design 8. Government policy 9. Expected retaliation
Substitutes	Threat of substitute products or services	1. Switching cost 2. Customer propensity to substitute 3. Relative price performance of substitutes
Competitors	Intensity of rivalry amongst competitors	1. Brand Identity 2. Switching costs 3. Product Differences 4. Industry growth 5. Fixed (or storage) costs/value added 6. Intermittent overcapacity 7. Concentration and balance 8. Informational complexity 9. Diversity of competitors 10. Corporate stakes 11. Exit barriers

Table 1. Adapted from (Porter, 2008) figure

2.3.2. Strategic Positions

As an organisation attempt to define its business strategy, it faces three specific types of problems, namely entrepreneurial, engineering, and administrative. The ***Entrepreneurial*** problem arises as the organisation establishes itself within a new product-market domain. ***Engineering*** problems aim to provide a solution to the identified entrepreneurial problem, by selecting the correct technology and control measures to ensure the delivery of an effective solution. ***Administrative*** problems typically follow as the organisation attempt to streamline its processes to ensure future growth (Miles, Snow, Meyer, & Coleman, 1978).

The strategic position of an organisation can fall into defenders, prospectors, and analysers. ***Defenders*** attempt to create a stable environment for their organisation by "sealing off" the total market and creating a domain for themselves. Thus creating a niche market in which they aggressively defend their market share. ***Prospectors*** are the opposite of defenders, and their primary objective is to discover and exploit product and market opportunities. ***Analysers*** combine the attributes of the prospector and defender, which attempt to combine their strengths to ensure a minimal risk exposure while maximising profits. The following table highlight a few pertinent questions that could arise when viewing the adaptive problems with the various strategic types (Miles et al., 1978).

	Defender	***Analyser***	***Prospector***
Administrative Problem	How to maintain strict control of the organisation to ensure efficiency?	How to differentiate the organisation's structure and processes to accommodate both stable and dynamic areas	How to facilitate and coordinate numerous and diverse operations?
Engineering Problem	How to produce and distribute goods or services as efficiently as possible?	How to be efficient in stable portions of the domain and flexible in changing portions?	How to avoid long-term commitments to a single technological process?
Entrepreneurial Problem	How to "seal off' a portion of the total market to create a stable set of products and customers?	How to locate and exploit new product and market opportunities while simultaneously maintaining a firm base	How to locate and exploit new product and market opportunities?

Table 2. Matrix of Strategic Position vs Strategic Problems (source: (Miles et al., 1978))

2.3.3. Strategy Mode

Strategy mode is another business strategy factor organisations need to consider. First, is having a competitive advantage and involves either lowering the cost or creating a differentiation within the market. Second is competitive scope, which requires the organisation to consider whether it wants to target a broad range of customers or a focused group of customers within a chosen market segment. These allow organisations to choose between the three generic strategies of focus, differentiation, or cost leadership. By sub-dividing the focus strategy further, the organisation can choose between cost focus and differentiation focus.

Cost leadership implies the organisation has the lowest cost within a market segment for a given product or service. A requirement of the organisation is to have a broad competitive scope since the breath of market is crucial to its cost advantage.

Differentiation requires the organisation to identify the unique value proposition to customers within a specific market segment. Products have a distinctive attribute, which appeals to a broad range of customers, in a target market and allows the organisation to charge a premium price for the product or service.

Focus strategy requires the organisation to narrow its target segment, within a particular market segment. Organisations adapt their strategy to serve the needs of the target segment, at the cost of excluding other customers within the particular market segment. Customers in this segment have unusual needs and can fall into either a differentiation-focus or cost-focus. *Differentiation focus* implies the organisation provide the target segment with a product or service, not met by other competitors who provide a broadly targeted offering. *Cost focus* requires a target market where competitors are providing broadly targeted offerings and over-performing for the target segment. Here, the organisation captures the target market by only meeting their needs and nothing more (Porter, 2008).

2.3.4. Strategy Delivery

Organisations need to employ three levels of engagement to deliver on their objects, namely strategic, operational, and tactical. ***Strategic*** delivery refers to employing and developing the properly skilled people, business processes, and technology in a synchronised manner, which contribute towards achieving the organisational goals and objectives. ***Operational*** delivery comprises a series of short-term activities or projects executed to realise medium-term objectives or goals of the organisation. ***Tactical*** delivery is short-term activities aimed at employing skilled people, technology, and information for direct encounters with competitors and achieves limited organisational objectives (Dettmer, 2003). Realizing these delivery plans require the implementation to have certain attributes, which are responsiveness, sustainability, agility, versatility, survivability, deploy-ability, and lethality.

Responsive organisations expect minute-notice of deviations in requirements and adjust accordingly. Such organisations require leaders with a responsive mind-set and for the organisation to plan the most likely contingencies and then train their people to respond accordingly.

Sustainability refers to the ability to have sufficient resources to sustain the organisation through its formative period. For start-up organisations, this means getting to cash flow, which is positive. While for an established organisation this is the period, it takes to win a decisive market share from its competitors.

Agility requires responsiveness and is a compromise between sustainability and mobility. Organisations also require the ability to transition between types of operation, without losing momentum. Responsiveness enables the organisation to get started and then making subsequent adjustments without losing any momentum.

Versatility refers to the ability to perform a variety of things well. Within organisations, this refers to the ability to do things differently from their normal operations, for periods to survive.

Survivability is the capability of an organisation to absorb unexpected moves from its competitors, which leaves the organisation on the defensive.

Deploy-ability requires more than deploying people and resources to fend off competitors. It is about understanding the final state, which these people and resources should be in to defend the organisation against competitors. Then tracing back to the current state or position of these people and resources, and understanding everything needed for deployment.

Lethality refers to the capability of the organisation successfully gaining a decisive share of the market over its competitors (Dettmer, 2003).

2.4. Defining IT Strategy

The present study will define an IT strategy by first describing the importance of IT within organisations. A discussion follows, of the categorisation of IT as either a method of exploiting or exploring business opportunities. Classification of IT describes the contribution towards strategy. A final description provides the organisational capabilities required to ensure IT can contribute towards innovation.

Importance of IT differs between organisations depending on their strategy, products, services, maturity level, and so forth. Various factors force an organisation to place a different level of importance in the respective areas within the organisation. By extension, IT can fall into one of four categories of core strategic, trusted supplier, utility, or emerging. *Core Strategic* implies IT is an integral part of the organisation regarding business strategy and product offering. *Trusted Supplier* is when the organisation regard IT as a key function of the business, but not strategic and not a principal driver in the business. Organisations, however, appreciate the value IT can provide towards efficiency and differentiation in the market. *Utility* regards IT as a beneficial function concerned with infrastructure and some core organisational processes. However, IT is neither strategic nor key to the organisation, which leads to the cost of IT being monitored carefully. In some organisations, the IT function might be outsourced. *Emerging* IT relates to smaller organisations and requires a specific set of skills, which could be a mixture of the three previously mentioned IT types. As the organisation grows, so does the IT role within the organisation. The emerging IT role depends on the roadmap of the organisation itself and therefore evolves with the small organisation (Gingras, 2006).

Categorization of IT within an organisation is either exploratory or exploitive. In other words, IT enables an organisation to either exploit new business opportunities or explore new products or services for the target market of the organisation. A strong IT capability is required to successfully exploit technology within the organisation's existing product offering and thus strengthen market position. On the other hand, a moderate IT capability tends to enable an organisation to explore potential new products and services. A strong IT capability, within the organisation, could pose a threat as the current technology advance. This threat emerges because of the organisational inertia since the organisation as a whole has become efficient and knowledgeable at using the current technology (Zhou & Wu, 2010).

Classification of IT contribution towards the organisational strategy can fall into one (or combination) of share, produce, enable, or augment. *Share* refers to IT enabling the organisation to share its information with various stakeholders and thus altering the existing relationship between the organisation and its various stakeholders. *Produce* implies the organisation can effectively use the shared information to enable a more integrated organisation, thus allowing the enhancement of the value-added processes of the organisation. *Enable* refers to the ability of IT to allow the organisation to develop new products or services for the target market. *Augment* is the ability of IT to generate knowledge and provide insight into processes, thus enabling the organisation to evaluate and implement strategies (Ward & Peppard, 2016).

Organisational capabilities of openness, integration, autonomy, and experimentation are required for IT to contribute towards the innovation within an organisation. *Openness* refers to the ability of the organisation to embrace external technological advances, with ease, into their internal developments to launch new products or services on time to the target market. *Integration* refers to the ability to integrate the organisational IT with existing business units to optimally improve organisational performance. *Autonomy* is the organisation's ability to encourage and tolerate risk-taking, ambiguity, and unsuccessful ideas, to find the innovation, which will improve competitiveness and performance. *Experimentation* refers to the ability of organisations to explore, pilot, exam, and market innovations in product or service offering to the target market (Chang, Chang, Chi, Chen, & Deng, 2012).

2.5. Business and IT Strategic Alignment

Henderson, Venkatraman, & Oldach (1996) presented the strategic alignment model, based on two building blocks, which is the strategic fit and functional integration. ***Strategic fit*** ensures the external domain fits with the internal arrangement of the organisation. ***Functional integration*** aims to guide the organisation by showing how the decisions made in the IT domain enhances or threatens the choices made in business and vice versa. It is important to note how integration needs to occur at both a strategic and operational level. The following figure pictorially shows the alignment model.

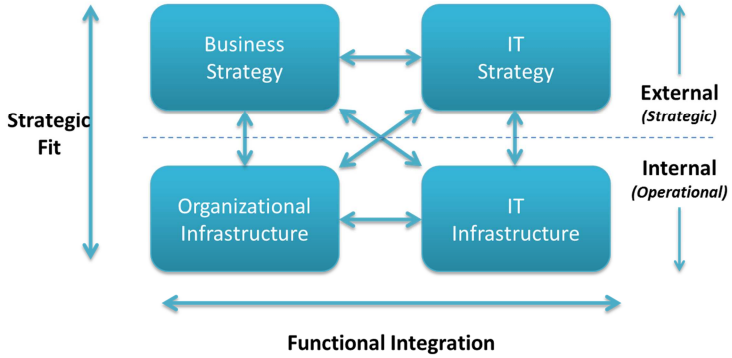

Figure 1. Strategic Alignment Model by Henderson et al. (1996)

Based on the above strategic alignment model, Henderson et al. (1996) present four perspectives, or methods of IT strategy implementation, namely strategy execution, technology potential, competitive potential, and service level. ***Strategic execution*** evaluates strategic goals based on the impact of critical operational processes and consequent requirements for IT products and services. This perspective emphasises how severely business process changes can support the business strategy. The key objective is to increase business process efficiency and reduce cost. ***Technology potential*** entails creating an IT strategy based on the business strategy and then use those choices to inform the IT infrastructure and processes. The key objective is for the organisation to become a technology leader in its market. ***Competitive potential*** seeks to exploit emerging IT capabilities to enhance its business scope, distinctive capabilities and allow it to form new relationships. In this perspective, the business strategy is not a given and instead emerge based on the IT capabilities. The key objective is to make the business a product market leader. ***Service level*** emphasises the formation of a first-class IT service organisation. Though service level is an important aspect of any organisation, it does not make effective use of IT resources, given the fast pace and ever-changing nature of contemporary business environments. The figure below taken from the Henderson et al. (1996) literature shows these different perspectives.

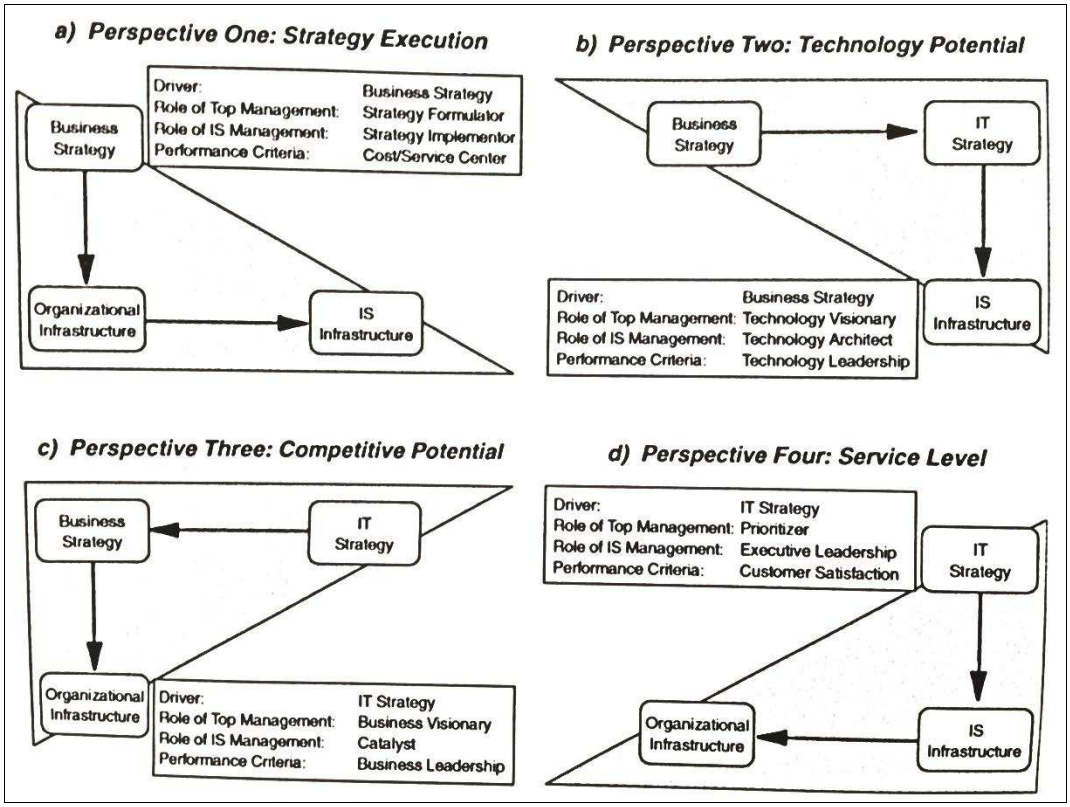

Figure 2. Strategy Perspectives by Henderson et al. (1996)

2.6. Cloud Computing Strategies

CC offers an organisation with new methods of procurement, development, and deployment of software applications and services (Khajeh-Hosseini et al., 2012). An organisation should note the following three findings when considering CC. Firstly, general-purpose applications are ideal to move to the cloud, since they contain no organisation-specific knowledge. Secondly, small to medium enterprises benefit mostly from CC at present. Thirdly, large enterprises, with existing infrastructure, should consider features of CC, which can be used within their infrastructure environment (Marston et al., 2011).

The use of IT is not sufficient to guarantee an organisation greater performance. This lack of guarantee is because IT in itself has no inherent value but instead depend on effective use within the organisation (Zott et al., 2011). Some organisations only use IT to improve efficiency, which does not necessarily translate into business value. This improved efficiency is perilous, since IT, efficiency in itself does not differentiate an organisation, and competitors can easily replicate any gained efficiency (Garrison et al., 2012).

2.6.1. Strategy through Cloud Deployment Model

An organisation can use CC using any of the known cloud deployment models, which is private, public, hybrid, or community. Garrison, Wakefield, & Kim (2015) found the hybrid delivery model, which combines the private and public cloud delivery model, contributes the most towards organisation performance. Achieving this requires the organisation to use the public cloud for carefully chosen low-risk workloads and the private cloud for applications and data, which are more sensitive towards data losses or outages (Garrison et al., 2015).

2.6.2. Strategy through Software as a Service

SaaS provides the organisation with the two distinct advantages of total-cost-of-ownership and data sharing. The ***total-cost-of-ownership*** of a particular software package reduces because the organisation requires no development investment, nor an IT competency to maintain the given software. ***Data sharing*** is achieved when the SaaS vendor provides the capability to share data among different SaaS type applications (Gonçalves & Ballon, 2011).

2.6.3. Strategy through Platform as a Service

PaaS enables an organisation to develop an application and deploy it into an environment, which will take care of executing the application smoothly. Thus allowing the organisation to focus its resources on creating value-add features and monetising from the application. The PaaS model can facilitate any technical requirements of the application, and make available to the application any CC services required (Gonçalves & Ballon, 2011).

2.6.4. Strategy through Infrastructure as a Service

To understand the strategic contributions of IaaS, it helps to understand the different dimensions of benefits associated with IaaS. Repschlaeger, Wind, Zarnekow, & Turowski (2012) categorise IaaS into the six different dimensions of flexibility, reliability and trustworthiness, IT security and compliance, scope and performance, service and CC management, and finally, cost.

Flexibility refers to the ease of integration into the existing IT infrastructure, the capability to manage and control the infrastructure without the need for manual intervention, and the service dynamics of the contract length between the provider and consumer as well as the scalability of the infrastructure provided.

Cost includes the price class, which are factors directly affecting the product cost, the payment method opportunities afforded to the consumers by the provider, and the method used to charge for the service.

IT Security and Compliance refer to the data centre security, which does not relate to the actual service provided but instead the security regarding the data centre itself. Network security requires examining the protection of communication within the data centre and studies the IT governance, which considers data encryption and the location of data centres.

Reliability and Trustworthiness refer to the ability of the provider to guarantee the availability of the service. The cloud provider is evaluated based on their transparency of business practices, performance, and service. Finally, the service level agreement shows the commitment of the provider to guarantee its service.

Scope and Performance are concerned with the type of hardware used, the characteristics of the service provided, additional add-on services, and the performance limits of the hardware provided.

Service and Cloud Management relates to support and customer service, the controls and management facilities to operate the service, and finally, the adaptability and usability of the web portals for the user to interact with (Repschlaeger et al., 2012).

2.7. Understanding Organisational Impacts

This section provides a description of the organisational impacts an organisation will experience when adopting new IT solutions, such as CC. Firstly, there is a description of how the organisation can prepare itself. Next, is a description of the business model impacts followed by creating an understanding of what agility means to an organisation. The next two sub-headings cover organisational culture and organisational fit, respectively. The section concludes by considering the role of management.

2.7.1. Preparing the Organisation

To support organisations in gauging their readiness for a CC environment, Akande & Van Belle (2014) proposed a framework, for financial services organisations. The three-stage approach framework is based on the Technology-Organisation-Environment (TOE) framework. During the first stage, the organisation critically analyse their motivation for considering CC. The second stage finds the organisation obtaining an understanding of the impact, which will be associated with moving to a CC solution. In the third stage, the organisation adopts the CC solution and proceeds with implementation. The framework advocates the organisation apply change management throughout the process.

2.7.2. Business Models

Business models have various definitions within literature. McGrath (2010) describes a business model as consisting of two key components, namely the unit-of-business and key metrics. The unit-of-business refers to the actual product or service the organisation sells to the customer. While the key metrics represents the critical processes, the organisation needs to sell the product or service to the customer. Zott, Amit, & Massa (2011) advocates how a business model provides a more holistic and systemic assessment of an organisation. This business model view entails not just understanding the production of the product or service, which serves the needs of the market, but also how the organisation executes their implementation. Tongur & Engwall (2014) defines a business model as the value proposition an organisation has to offer for a specific market segment, or how the organisation intends to create value for the customers in a given market segment.

Business models provide different lenses through which managers and executives can operate their organisation (McGrath, 2010). One such lens provides insight into the use of IT within an organisation, and the management of innovation and technology (Zott et al., 2011). A business model also prescribes how the organisation intends to conduct business with a prospective customer. Thus, the business model dictates which technology would best realise the product or service of the organisation (Baden-Fuller & Haefliger, 2013). The ubiquitous nature of the internet and IT has increased the interest in business models, to help organisations understand how to maintain a competitive advantage (Zott et al., 2011). However, competitors can copy business models, thus reducing the period over which an organisation has a competitive advantage (McGrath, 2010).

The decline in computing and communication cost have introduced different methods of conducting business (Zott et al., 2011). Some business models are purely technology driven, and these organisations do not own any assets like their traditional counterparts. Uber and Airbnb are examples of such technology-based organisations (Cannon & Summers, 2014). Even though technology is, an integral part of these organisations, it should be noted how the technology itself does not offer any value to the business. Instead, the organisation requires an effective business model to realise any potential business performance (Zott et al., 2011). Baden-Fuller & Haefliger (2013) shows how the business model functions as a mediator between technology and business performance. Tongur & Engwall (2014) acknowledges how the business model is vital to any organisation, but caution against being held hostage to a particular business model when the external markets conditions changes and the business model is no longer effective.

Changes in technology pose a dangerous threat to an organisation (Tongur & Engwall, 2014). Organisations are therefore required to relook their business models, on a regular basis, to ensure they maintain their competitive advantage (McGrath, 2010). In the short term, these shifts do not prevent the organisation from conducting business. In the long term, failure to understand the advantages and experimenting with these shifts can negatively affect business performance. Organisations should, therefore, possess the capability of adapting to disruptive technology and not be caught up in the inertia of their business model (Tongur & Engwall, 2014). Government regulation has the potential of becoming a barrier towards organisational growth. Regulatory awareness is therefore relevant to organisations based only on technology, in particular, as government regulators are not sure how to deal with them. Thus, even though such forms of technology advancement provide great benefits to the economy, regulators are resistant to such technological advancements. These technology-based organisations, therefore, need to understand these barriers and adjust their business models accordingly (Cannon & Summers, 2014). Understanding the possible barriers forces the organisation to experiment with business models and ensure the organisation remains competitive through the utilisation of innovations (McGrath, 2010).

2.7.3. Organisational Agility

Organisational agility refers to the capability of the organisation to sense and interpret changes within the business environment and swiftly amend business processes to benefit from the change (Chen et al., 2014). Lu & Ramamurthy (2011) defines organisational agility as the capability to handle unexpected and unstructured changes, not planned for in the organisational flexibility. Van Oosterhout, Waarts, & van Hillegersberg (2006) notes how there is a distinction between an organisation being flexible and agile. Flexible organisations can make predictable changes to its business processes and adjust to business environment changes. Agility, however, requires the organisation to go beyond the flexibility limitation defined by the business processes.

Lu & Ramamurthy (2011) identified two types of organisational agility, namely market capitalisation and operational adjustments. Market capitalisation is externally focused and refers to the capability to sense customer needs and then respond rapidly to capitalise based on the customer need. Operational adjustments focus on the internal business processes of the organisation, and its capability to rapidly and physically adjust to changes in the business environment. Another description of organisational agility comes from Chakravarty et al. (2013) who presents it as a two-dimensional capability consisting of entrepreneurial and adaptive agility. Entrepreneurial agility provides the organisation with the capability to proactively respond to changes and gain early advantages by seizing market opportunities. In contrast, adaptive agility enables the organisation to defensively protect itself and recover from any external disruption to the organisation, for example, changes in the market forces.

Organisational agility plays a vital role in contemporary business environments. A worldwide survey of 349 executives shows how almost 90% trust organisational agility is vital to business success (Glenn & Stahl, 2009). It is, therefore, important to understand that organisational agility is significant on two levels, namely the business-network-level and enterprise-level. Business network agility will facilitate the organisational agility and require the organisation and their business network to be agile. In situations where only the organisation is agile and not the business network, the organisation will be inhibited from responding effectively to business environment changes (van Oosterhout et al., 2006). However, research lacks a thorough understanding of how organisations construct and leverage agility to achieve exceptional performance. Although some researchers indicate how IT competencies can assist in constructing the agile capability, limited empirical research can identify the role played by the IT competency (Chakravarty et al., 2013).

2.7.4. Organisational Culture

Organisational culture relates to the shared values and beliefs within an organisation (Slater, Olson, & Finnegan, 2011). Quinn & Rohrbaugh (1983) shows how the competing values framework represents the organisational cultures. From this framework, emerge three sets of competing values, which managers within an organisation have to contend with, namely internal versus external, flexibility versus stability and means versus ends. Slater et al. (2011) subsequently explain the four culture types, which emerge out of these competing values. The ***Adhocracy*** type is characterised by entrepreneurship and creativity in which the organisation is flexible and externally focused. The ***Market*** type is also externally orientated and distinguishes itself by emphasising control, which results in highly competitive behaviour. The ***Clan*** type is internally focussed uses flexibility to create relationship-building behaviour. The ***Hierarchy*** type is also internally focussed and is characterised by the emphasis on control in producing operations, which is smooth and predictable. It is important to note how organisations will demonstrate attributes of all culture types but fundamentally controlled by a single particular culture type.

Organisational culture can facilitate the understanding of the business strategy by employees. It creates the appropriate behaviour within employees, which enables the success of the organisation (Slater et al., 2011). Within the organisation, the personality and value system of the top-level leaders set the tone throughout the organisation. It determines the types of people within the organisation, the acceptable behaviour, decision making and the interaction and relationship between people (Giberson et al., 2009). However, the organisational culture needs to stretch beyond the organisational boundaries. The study by Glazer & Beehr (2002) on value congruency and shows how performance within the organisation is enhanced when there is a fit between the organisational values and the national culture in which the organisation resides. A study by Eisend, Evanschitzky, & Gilliland (2015) verifies how this value congruency extends to organisations releasing their new product within a specific national context, and the subsequent performance of the released product.

2.7.5. Organisational Fit

Technology-Task Fit (TTF), by Goodhue & Thompson (1995) highlights the importance of having a good fit for individuals between the IT introduced (for a specific task) and the subsequent performance. Similarly, the study of Strong & Volkoff (2010) shows how the IT fit for organisations refers to the ability of IT to satisfy the holistic needs of an organisation. Furthermore, Hung, Chen, & Wang (2014) highlights the importance of organisational fit, to the success of any IT implementation, as it brings about changes to the dynamics within an organisation.

Strong & Volkoff (2010) broadly categorises organisation-IT fit into coverage and enablement. The coverage fit refers to the ability of IT to satisfy the requirement of the organisation. By comparison, enablement fit characterises the ability of IT to assist the organisation in operating efficiently and effectively. In the same way, the study of Hung et al. (2014) categorises organisation fit into business process fit and data fit. Business process fit evaluates how the organisation performs activities and the boundaries within the organisation for these activities. Data fit concerns itself with the various data formats and sensitivity of the relevant data. Hung et al. (2014) argue how these two categories of fit play a vital role in the successful fit of a new IT system into the organisation.

Organisations are required to evolve as the business environments they find themselves in change (Nöhren, Heinzl, & Kude, 2014). Some organisations find themselves in a time of immense change and instability, which can result in organisational misfits with the changing environment (Maurer, Berente, & Goodhue, 2012). Misfit can be a result of the IT solution, which from the outset was a fit, and has now transformed into a misfit due to a transformation required by the organisation. Some information technologies strive to implement a standardised approach to a particular business process, which could result in a misfit with the practice within the organisation (Nöhren et al., 2014). Another contributor to misfit can be the various levels and groups of people within the organisation. Here the importance is to understand how a good fit within one level or group of people could be a misfit within another (Maurer et al., 2012). However, these types of misfits could be the necessary catalyst, which the organisation needs for change towards their strategic goals (Nöhren et al., 2014). Organisational misfit can also assist to break out of the inaction that may exist within the organisation (Maurer et al., 2012).

2.7.6. Role of Management

Managers perform a critical role when an organisation is embarking on implementing any new technology. Their business acumen, technical capabilities and specific knowledge of their organisation, make them key individuals in identifying the positive impact which emerging technologies can have on the performance of the organisation (Garrison et al., 2012). In particular, organisational changes are not straightforward and are dependent on the maturity level of the organisation and its culture. These changes require managers who can effectively handle the interconnected nature of the infrastructure, the political landscape associated with the technology change and aligning the technology offering with the organisational needs (Khajeh-Hosseini et al., 2012). Given this complexity encountered by managers, it is worth looking at some of the complexity that would be associated with a CC solution.

Change Management is important since CC carries with it a complex, yet flexible technology infrastructure, which can integrate geographically distributed disparate systems. Managers are required to embrace and enact shared policies and standards, which ensure information can easily be, shared internally and externally (Bhatt, Emdad, Roberts, & Grover, 2010). However, senior managers are finding the traditional methods of management, which consists of using hierarchy, bureaucratic systems, and control-based management no longer effective. Instead, the networks amongst people, flexible processes, and relationships which feature coaching and empowerment have respectively replaced this (Bartlett & Ghoshal, 2002). A challenge facing managers is to navigate the political landscape of the organisation. The senior managers will set the policies and standards while enactment thereof, is handed over to the various areas within the organisation. Managers in these various areas face challenges when employees resist the changes brought about by the policies and standards (Khajeh-Hosseini et al., 2012). Another challenge for managers is to ensure they understand the service level agreement they have with the cloud provider.

Service Level Agreements (SLAs) play a key role for the cloud provider and the consumer. This importance of the SLA is due to the distributed nature of CC, which would need to integrate into the organisation's existing infrastructure (Misra & Mondal, 2011). A manager, therefore, needs to consider the following components. Service guarantee, which gives the organisation an indication of the measures the cloud provider will use to ensure they fulfil their obligation. Time-period specifies the duration of the agreement. Granularity will outline the computing resources on which the service agreement applies. Exclusions highlight the conditions under which the service agreement measurements are not enforceable. Credit refers to the rebate given to the customer if the cloud provider cannot fulfil its service agreement obligation. Violation measurements and reports will outline the mechanism used to measure and report any violation of the service agreement obligations, and who will be performing it (Baset, 2012). These factors emphasise the importance of management's ability to apply systems thinking. It will assist managers as they are contemplating the effects of integrating emergent technologies into the existing technology infrastructure of the organisation (Garrison et al., 2012). Another aspect managers should be concerned about is the cost associated with a CC solution.

It is important for managers to understand the cost associated with the CC solutions they are implementing. Given the rental business model of CC and the need for an organisation to be cost-effective, it is important to understand the real cost-saving realisation. To understand the real cost saving managers cannot make business usage assumptions, which are simplistic (Khajeh-Hosseini et al., 2012). Research shows how organisations need to consider various factors when deciding on a cloud solution as a cost-saving mechanism. The research on cost and benefit analysis, of CC, shows the importance of organisations to consider more than just the direct costs. It found a division amongst the organisations concerning the cost-saving realisation. Some organisations experienced costs saving while others are finding CC more expensive. Organisations, therefore, need to consider their context and scope to understand whether cost-saving benefits can be realised (Misra & Mondal, 2011). There should also be an awareness of any hidden cost and vendor lock-in, as this could pose a risk to the organisation, and threaten the cost benefits initially envisaged (Walterbusch, Martens, & Teuteberg, 2013).

2.8. Summary of Chapter

CC started as a very technical solution and went through a phase where CC needed to establish a definition and purpose. Once the NIST defined CC, research into CC started producing various frameworks to assist with the adoption and assessment of CC. Organisations then started adopting CC, which gave rise to various issues around CC. The most notable being the issue of privacy and security. However, new technologies such as mobile computing, the internet-of-things, and big data and researchers have started studies to understand how CC can play a role. The present study will contribute to this body of knowledge by providing a business view of CC.

Understanding business strategy placed the focus on the industry structures, strategy positions, strategic mode, and strategy execution. By understanding, the industry structure of a target market the organisation can establish the potential profitability of a target market. Strategic position then assists the organisation to understand how the organisation will position itself within the target market. The strategy mode provides the organisation with options to compete in the target market. Finally, the strategy execution helps the organisation to clarify how to deliver their product or service to the target market. The present study will show which business strategy factors contribute to adopting CC within an organisation.

The strategic role of IT provided clarity in terms of understanding the role IT plays within an organisation. The chapter then touched on the strategic alignment model, and understanding how IT fits into the overall business strategy of an organisation. A background on CC strategy is provided where the strategic contributions where segmented based on the characteristics of CC which are the cloud delivery model, IaaS, SaaS, and PaaS. The present study shows how the role of IT contributes to moving business capabilities to a CC environment.

Organisational impact led to identifying business models, organisational agility, organisational culture, organisational fit, and the role of management. Business models can provide insight into the use of IT within an organisation to realise the objectives of the organisation. Organisational agility is vital in contemporary business environments, and some researchers indicate how IT competencies assist in constructing the agile capability. Organisational culture assists with communicating the business strategy and creating the appropriate behaviour within employees. There is also a need to stretch beyond the organisational boundaries and include the national culture in which the organisation resides. Organisational fit also plays an important role, as organisations need to ensure the technology they deploy satisfy the requirements of the organisation. However, a level of misfit could be beneficial to some organisations to assist them in their growth. In conclusion, managers perform a critical role in handling the interconnected nature of the infrastructure, the political landscape associated with a technology change and alignment of the technology offering. The present study will show how these organisational areas impact CC.

3. Methodology and Research Design

This chapter describes the research methodology and design followed. The chapter starts by introducing the research "onion" as proposed by Saunders, Lewis, and Thornhill (2009). This research "onion" guides the rest of this chapter. In the summary section, this chapter presents a table, which summarises the philosophy and research design of this study.

3.1. Research Design

Research design provided a general plan that assisted the researcher to answer the research question. The desired outcome of the research design was to provide clear objectives, sources for data collection, consideration of any constraints, and a discussion regarding the ethical concerns. Achieving this required the use of the research "onion" as depicted in the figure below. Planning the research was performed using this research "onion" as a framework. This research design, shown below, has considered the elements of philosophy, approach, strategy, research choice, time horizon, and techniques (Saunders et al., 2009).

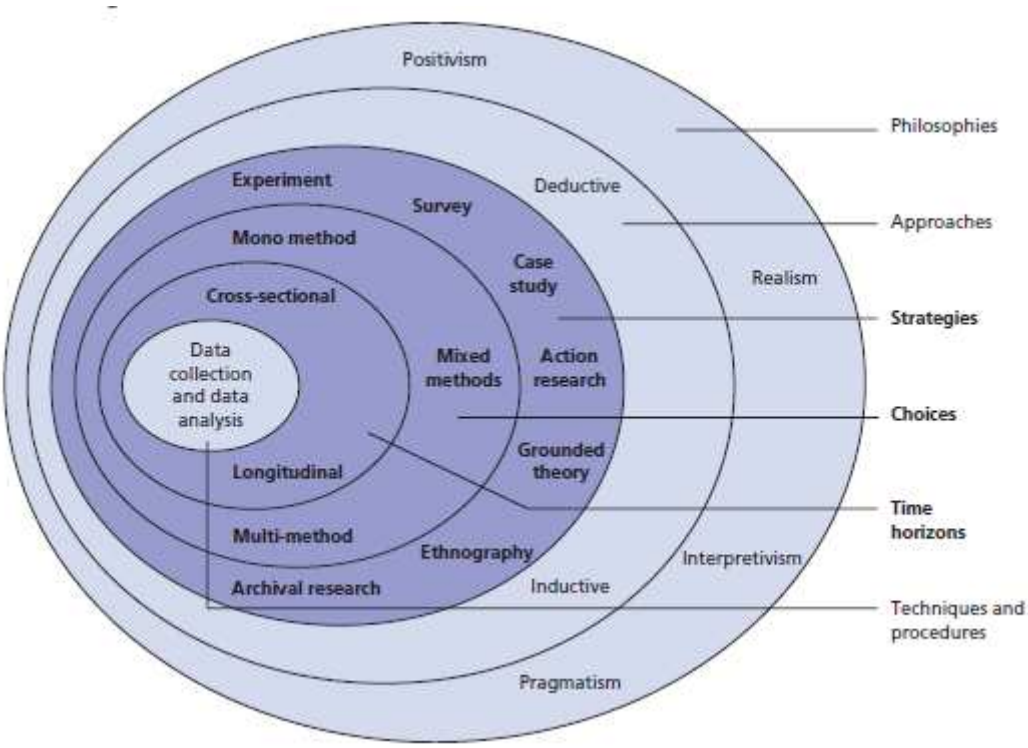

Figure 3. Research "onion" taken from Saunders et al. (2009)

3.2. Research Philosophy

Ontology plays a vital role in research since it provides insight into the assumptions of the researcher. There are two parts to ontology, namely objectivism and subjectivism. Objectivism considers social entities to exist external to social actors and following specific structures or procedure. Subjectivism, on the other hand, observes the social interaction between the social actors and the perceptions and actions, which result. Subjectivism is often associated with constructivism (Saunders et al., 2009). Constructivism considers knowledge to shape based on the interaction people have with their environment. Therefore, to attain knowledge one first encounter an idea before exploring the idea (Harlow, Cummings, & Aberasturi, 2007).

Epistemology is establishing what acceptable knowledge for a particular field of research is. Within epistemology, there exist three dominant views, namely positivist, realist, and interpretivist. A positivist concerns itself only with collecting data, which can be observed. Realist takes the stance that what our senses show us is the truth. Interpretivist advocates the researcher to understand the role social actors play within their environment (Saunders et al., 2009).

Axiology requires the researcher to be aware of the role values play towards the interpretation of the research data (Saunders et al., 2009).

This research has taken a ***constructivist*** ontological view since the business environment has evolved into one, which is service driven, information-based and knowledge-intensive (Bartlett & Ghoshal, 2002). The change in business environment, therefore, justified the researcher taking an ***interpretivist*** epistemological view. Werfs et al. (2013) have shown that interpretive research allows for an enhanced understanding of the critical processes associated with CC.

3.3. Research Approach

The research approach was important towards clarifying the type of research performed. Two types of research approaches were identified, namely deductive and inductive. A deductive approach implied the researcher had an existing theory, which required testing. Alternatively, there was the inductive approach. Here the data would have been collected, and the researcher formulated the theory as it emerged from the collected data (Saunders et al., 2009). Khajeh-Hosseini et al. (2010) have shown the limited literature relating to the impact on an organisation when migrating to a CC environment. This research has therefore taken an ***inductive research approach*** to realise the objectives set out in the present study.

3.4. Research Purpose

Research purposes are classified as being one of exploratory, descriptive, and explanatory. An exploratory purpose clarifies the understanding of a problem. A descriptive purpose portrays accurate information about a particular subject. Finally, an explanatory purpose explains the relationship between variables. Descriptive research can be an extension of an explanatory study (Saunders et al., 2009).

Low et al. (2011) recognised CC as a great opportunity for innovation within an organisation. However, Brender and Markov (2013) cautioned that a business strategy was essential to ensure maximum rewards and greater performance from an IT investment. This research, therefore, chose a ***descriptive and explanatory purpose*** to analyse this research topic.

3.5. Research Strategy

The purpose of a research strategy is enabling the researcher to answer the specific research question of the study (Saunders et al., 2009). The thematic analysis allows the classification, and presentation of themes from the data collected and assists in determining the relationships between concepts and compares those with the underlying data (Alhojailan, 2012). There are various types of thematic analysis approaches, from which the researcher can select. These approaches include "Inductive versus theoretical thematic analysis, semantic or latent themes, Epistemology: essentialist/realist versus constructionist thematic analysis". The inductive thematic analysis is data-driven, creating a strong link between the data and themes. The approach allowed for coding in this research without any pre-existing coding frame, or analytical preconceptions (Braun & Clarke, 2006).

Research performed by Khajeh-Hosseini et al. (2010) showed limited literature relating to the organisational impact when migrating to a CC environment. This research has therefore chosen to use ***inductive thematic analysis*** as its research strategy.

3.6. Research Method Choice

Research methods can be either quantitative or qualitative. Quantitative methods are predominately associated with numeric data collection and analysis. Qualitative methods, on the other hand, relates to non-numerical data collection and analysis. These methods further divide between mono-method, multi-method, and mix-method. Both the multi-method and mix-method approaches allow the researcher to use multiple data collection and multiple data analysis techniques. However, the difference is the following. In a multi-method approach, all collection and analysis techniques are either qualitative or quantitative, but not both. In contrast, the mix-method approach allows the use of both qualitative and quantitative together during data collection and analysis (Saunders et al., 2009). The figure below pictorially provides more contexts.

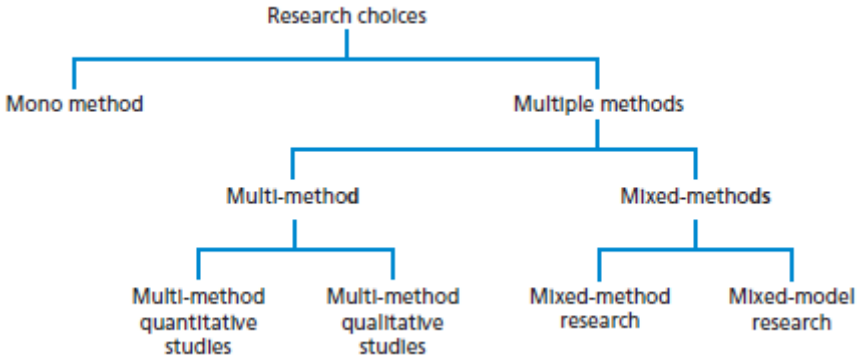

Figure 4. Research method choice was taken from (Saunders et al., 2009)

This study ventured into describing and explaining the relationship, which exists between CC and the business strategy in the investment services sector. Achieving this understanding required this research to consider the behaviour and attitudes of individuals towards CC and its relationship to the organisational strategy. According to Myers (1997), a qualitative research method, which reflects on the social and cultural behaviour of participants, is best suited for such studies. This research has therefore chosen ***multi-method qualitative*** research as its research method.

3.7. Research Timeframe

Research timeframe was another important factor while planning the research and could be either longitudinal or cross-sectional. Longitudinal studies stretch over a long period, while cross-sectional studies require a much shorter timeframe (Saunders et al., 2009). This research considered, the existing capabilities of the organisation, the business strategy the organisation was implementing, and the role (the key decision makers perceive) CC played. Similar to Karahanna, Straub, and Chervany (1999), this study aimed at describing and explaining the preliminary perceptions of the key decision makers, but not the complexities associated with the adoption and usage. This research, therefore, used a ***cross-sectional study*** as its research timeframe.

3.8. Data Collection

3.8.1. Identification of the Research Population

This study collected data from investment services organisations within South Africa. Triangulation was used to validate the information gathered through interviews against the annual integrated reports of the participating organisations. These annual integrated reports are publically available on the respective websites of the organisations. There were two factors used to narrow the sample size, of this research, namely organisational factors and technology factors.

Delimitation by Organisational Factors

Organisational factors were dimensions, which the researcher considered important. For this research, the researcher considered the cloud user, the industry sector of the organisation, the size of the organisation and the user role within the organisation. Please note the dimensions provided are not an exhaustive list and only represented the dimensions considered for this research. The researcher compiled the figure below to depict the dimensions used. The chevrons highlighted indicate the areas on which this research focussed.

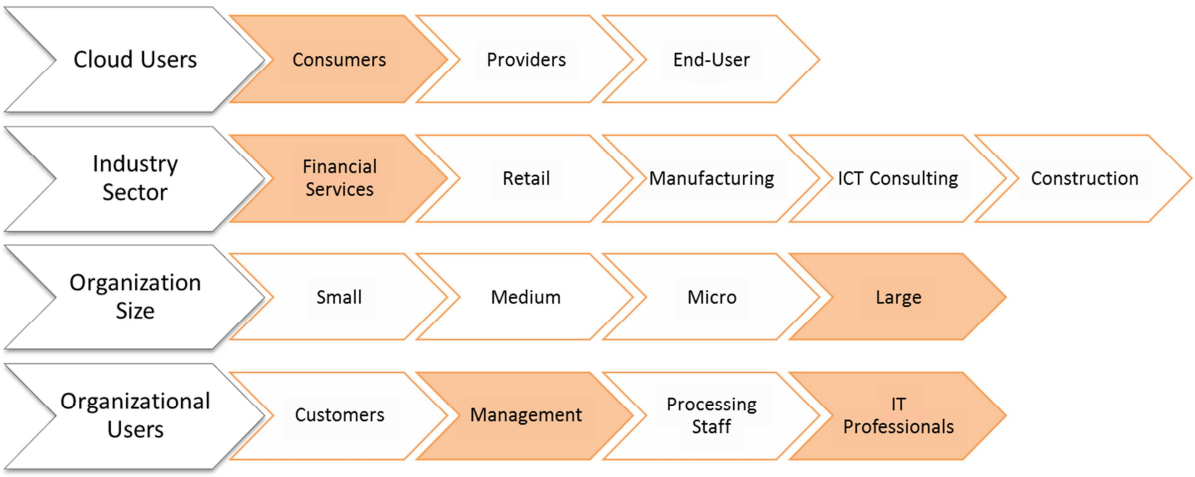

Figure 5. Organisational dimensions

From a cloud user perspective, this research only considered the perspective of a cloud consumer. In terms of industry sector, the researcher focussed on the investment services sector (within financial services). Participants consisted of large organisations who owned an internal data centre. Interviewees were senior managers or executives within the organisation. By using this user profile for the interviewees, this research collected data from decision makers within the organisation. This profile criteria led the research towards selecting user roles, which were Chief Information Officers, Chief Technology Officers, Head of IT, IT Executive Manager, or IT manager. Once a clear view existed for the organisational factors, the next step was to understand the technology factors.

Delimitation by Technology Factors

The information technology dimension was important since this research studied the role of CC within an existing IT infrastructure. The identified dimensions were the influencing factors of the existing technology, the technical features of CC and the usage level expected from CC.

Influencing factors referred to factors within the organisational technology estate influencing the move towards CC. The research focussed on the existing organisational technology architecture, with the assumption that it played an important role catering to the business needs. Consideration also included the usage level of software applications. However, this study chose not to narrow its focus in this regard. Instead, it allowed the data collection to unpack the software application usage levels expected.

3.8.2. Data Collection Technique

The primary collection method used in the present research was face-to-face interviews with participants. In addition to this, the researcher also consulted the annual integrated reports of organisations. For organisations, not producing, the annual integrated report the researcher consulted the respective annual financial reports of the affected organisations.

Interview Design

Turner (2010) summarised three interview design methods, which are informal conversation interview, general interview guide approach, and standardised open-ended interview. Informal, conversational interviews do not require the interviewer to ask any specific question and instead relies on the interaction between the participants to guide the interview. This interview type leads to asking inconsistent questions during the various interviews and make the data coding more challenging. The general interview guided approach allows for a more structured interview and ensures the collection of information is for similar areas of interest. However, the researcher may pose a question slightly different depending on the interviewee, which could lead to inconsistent understanding by the interviewee. Standardized open-ended interviews require questions whose words are always identical irrespective of the interviewee, yet allow for open-ended responses. Participants can express themselves, which leads to responses rich and thick with qualitative data. However, require cumbersome processes to scrutinise the narrative to reflect an accurate overall view.

A general interview guided approach was conducted with key stakeholders of this study. These stakeholders needed to have sight of the business strategy of the organisation and play a part in the IT strategy of the organisation. The interview questions were based on the literature review of both business strategy and CC strategies. The interview guide used during interviews can be found in Appendix 8.4.

Data Capturing and Editing

Recordings were made of all the interviews and subsequently, transcribed using a SaaS-based product called "oTranscribe" which can be found at "http://otranscribe.com/". Once transcribed, the researcher imported these transcriptions into the qualitative analysis software package, nVivo, for thematic analysis. The resulting data codes were loaded into a spreadsheet and grouped according to their relevance and connection to each other. This process allowed to group codes together into sub-themes based on their relationship to each other.

3.8.3. Data Validity

Data validity was important in this qualitative research to ensure the collected data was a true representation of a situation (Saunders et al., 2009). This meant ensuring the data collected related to CC and business strategy. Mason (2006) mentioned how triangulation had formed part of validating data or analysis. For this study, the annual integrated reports were used as a triangulation method to validate the data collected.

3.8.4. Data Collection Assumptions and Limitations

Performing this research required the following assumptions to be made:

1. All respondents had some level of knowledge regarding CC
2. The respondents were key individuals with regards to information technology decisions
3. Sufficient investment services organisations in the Western Cape region participated in the research

Insufficient knowledge of CC would have resulted in the collected data not being a representation of the role CC have within the respective organisations, as they would not have provided sufficient context for discussion. If the respondents were not key individuals affecting technology strategy, the research would not reflect the strategic decision-making process, as non-decision makers would merely provide an opinion. The number of participants in the research was important to provide a general outline of the investment services organisations view towards CC.

3.9. Limitations

This research encountered some limitations while performing the data collection and data analysis. One of the limitations entailed securing interviews with the selected participants. This research originally planned to complete the data collection within four months. However, the difficulty of securing time with participants led the process to take nine months. Due to the seniority of the participants, the researcher was not able to reach all earmarked participants to schedule an interview. Another contributing factor was the research timeframe, which prevented the researcher from going back to all interviewees.

3.10. Confidentiality, Ethics, and Approval

Given the sensitivity regarding the information within investment services companies, all participants were treated as confidential and anonymous. Only the researcher and the supervisor of the present study had access to the list of organisations and names of the people interviewed. By assigning codes to all participant names, it enabled the researcher to maintain the anonymity of the participants. Communication with participants was initiated by emailing participants a standard email template requesting participation in this study. There is a copy of the email template provided in appendix 8.3. Participants were provided with a formal letter with the University of Cape Town (UCT) logo, on request. Thus, the researcher will hold the identities of the organisations in the strictest of confidence.

The present study also received formal ethics approval from the UCT Ethics Committee. Also, interviews were the primary data collection method and all information collected had the consent of the participants and treated as confidential.

3.11. Summary of Chapter

The table below summarises the methodology and research design followed in this research.

Research Item	Value
Philosophy	Constructivist ontological view Interpretivist epistemological view
Approach	Inductive Research
Purpose	Descriptive and Explanatory
Strategy	Inductive Thematic Analysis
Method	Multi-Method Qualitative Analysis
Timeframe	Cross-Sectional
Data Collection	Investment Service organisations within the South African context A general interview guided approach was conducted
Limitations	Securing interviews
Confidentiality	UCT Ethics Committee

Table 3. Methodology and Research Design - Summary

4. Findings

This chapter analyses the data collected through interviews. The chapter provides a context of both the organisations and the people interviewed. An explanation shows why the researcher concludes this study has reached saturation. An overview then provides insight into the codes and sub-themes, which formed. In conclusion, the chapter presents the qualitative results.

4.1. Organisational Context

Within the context of this study, it is important to understand the type of organisation and profile of the participating individuals. This study aims to describe and explain the relationship that exists between the business strategy in large South African investment services organisations and CC. This section, therefore, starts by explaining the selection criteria used for the organisations. The years of operation and annual integrated reports provide further explanation regarding the selection of the participating organisations. Finally, an explanation of the individuals discusses their profile within the organisation and the role they play in business strategy decisions.

4.1.1. Organisation Selection

All participants in this study were a South African based organisation, therefore, providing insight of the South African context. By using the list of voting members of the Association for Savings and Investments in South Africa (ASISA), this study determined the list of South African investment services organisations. The list of organisations was available on the ASISA website. The list of potential organisations was loaded into a spreadsheet to enable tracking progress. All the participating organisations, interviewed, were multi-nationals with operations in various countries, each with their business requirements. Furthermore, these organisations owned a variety of technology. While some technologies were internal solutions, others were external. These organisations had one or more IT departments, who were providing solutions to business units within the organisation. The IT department built some solutions, while other solutions were outsourced to vendors. Most of the organisations had an IT infrastructure managed by a hosting partner. Using the ASISA list, this research determined which organisations to interview. The organisations not interviewed either could not be contacted or proved too small is size. A table provided in section 4.1.6 summarises the organisation selection.

4.1.2. Organisation Years of Operation

Years of operation provided insight into how older organisations dealt with the evolution of technology, compared to their younger competitors. This provided insight regarding their business strategies and the success of those business decisions towards the survival of the organisation. Most of the participating organisations had been operating for over fifty years. The youngest organisation was operating for seventeen years, while the eldest organisation has been operating for over one hundred and fifty years. Given the maturity of these organisations, they had experience with technology change and surviving the disruptions these technology changes caused. Their view on CC, therefore, provided good insight.

4.1.3. Organisation Annual Integrated Reporting

The Annual Integrated Report was produced by the organisations listed on the Johannesburg Stock Exchange (JSE). These reports provided the triangulation, to check if the data collected during interviews resonated with the company strategy. Two organisations were not producing this report, and for these organisations, their annual financial statements were used. Only the organisations, which produced no integrated report made no mention of technology in their annual financial statements. For the remainder of participating organisations referred to technology, and acknowledged the potential technology had to change their industry. However, none of these reports made any direct reference to CC. Instead, these reports referred to business capabilities such as customer experience, analytics, and digital distribution (channels). These reports reflected the interview results where participants focussed on these capabilities, and CC was an afterthought. The only capability exception related to digital distribution, which no participant mentioned.

4.1.4. Participant Profile

The participants in this study held either senior management or executive positions, within their respective organisations. This level of participants was important towards ensuring a level of business strategy exposure. Specific role types included participants in one of the following positions of Chief Information Officer (CIO), Chief Technology Officer (CTO), IT Architect, IT Executive, or IT Manager. The participants had a varied level of knowledge or implementation exposure of CC. However, their exposure to both business needs and technology provided the rounded view required by this research. A table, provided in section 4.1.6, summarises this information.

4.1.5. Participant Role in Strategy

All participants play a part in the business strategy of the organisation. The participants fall into the categories of Educator, Contributor, or Executor. Educators (participants CIO2, ITA1) play the role of informing the strategist on trends within the technology industry, which is then, informs the strategy for the business. Participators, (participants CIO1, CTO1, CIO3, and HOD1) form part of the panel of strategists who decides on the business direction of the organisation. Executors (participants ITE1, ITM1) have complete knowledge of the business strategy and ensure alignment of implementations with the business strategy.

4.1.6. Summary of Organisational Context

The organisational context sub-section has provided context for the qualitative research of this study. The following two tables provide a high-level summary of the organisational context.

Organization	Number of Employees	Years of Operation	Industry Type	Is Integrated Annual Report Available?	Is Public or Private Company?
ORG1	40+	30	asset management	No	Private
ORG2	20,000+	130	banking	Yes	Public
ORG3	15,000+	100	Insurance, banking, asset management	Yes	Public
ORG4	290+	25	investment management	Yes	Public
ORG5	170+	24	asset management	No	Public
ORG6	24+	18	investment advisory	No	Private
ORG7	50,000+	170	investment, savings, insurance, and banking	Yes	Public

Table 4. Summary of participating organisations

Participant Interviewed	Position Held	Gender	Has Done A CC Implementation	Business Strategy Exposure
CIO1	Chief Information Officer	Male	Yes	Yes
CIO2	Chief Information Officer	Male	Yes	Yes
CIO3	Chief Information Officer	Male	Yes	Yes
CTO1	Chief Technology Officer	Male	Yes	Yes
HOD1	Head: IT Strategy & Architecture	Male	Yes	Yes
HOD2	Head of IT	Male	Yes	Yes
HOD3	Head of IT	Male	Yes	Yes
HOD4	Head of IT	Male	Yes	Yes
ITA1	Enterprise Portfolio Architect	Male	Yes	Yes
ITE1	Information Technology Executive	Female	No	Yes
ITM1	Information Technology Manager	Male	No	Yes

Table 5. Summary of participants interviewed

4.2. Qualitative Saturation

Saturation is reached when the collection of new data provide no further new information. Qualitative research, however, has no tests of adequacy to determine which sample size will provide the researcher with saturation (Morse, 1995). There are factors, which researchers can consider and includes the scope of the study, the nature of the topic, the quality of data, the study design, and the use of shadow data (Morse, 2000). Using this understanding about saturation and some factors of consideration, the researcher will show how the present study has reached saturation.

The scope of this study and data collection targeted a specific audience. This study only considered large organisations with their own internal data centres. Furthermore, the financial services industry was chosen as its primary target, which extended to life insurance, investment services, and asset management. The profile of the interview participants needed to be executive or senior management level, which ensured either exposure to business strategy or a contribution towards the business strategy of the organisation. Participants were therefore required to have knowledge of the business strategy and how CC played a role in strategy formulation or strategy execution. Regarding the questions asked, it had roots in the business strategy literature review done, as part of this study.

The nature of the topic for this study is CC and business strategy, which all participants understood well. All participants understood what CC is and they all had varying exposure to business strategy within their respective organisations. These factors made it easy to gain information from the participants during interviews.

Quality of data was good when collected during interviews. Most of the participants had experience in CC and could relate from experience when asked questions during the interview. All participants, except for one, gave of their time without being distracted during the interview. This level of participation made possible the extraction of rich data sets during the interviews.

Study design for this study is a cross-sectional study to analyse the relationship between business strategies and CC options in the investment services sector. This study considers the available IT infrastructure within the organisations, the current business strategies, and the role (the key decision makers perceive) CC played within their organisation.

Shadow data was not used in this study.

The following table presents the high-level sub-themes uncovered from the interviews conducted. In the table, the first two horizontal rows depict the date when the interview occurred and the participant code. The first column from the left of the table, list the sub-themes found during the interviews. Cells in the table with different colours represented either the first or subsequent times a sub-theme was encountered. Dark green represents the first time a sub-theme became known, while the light green represent subsequent encounters of the same sub-theme in subsequent interviews.

	Interview Timeline									
	1-Apr	5-Jun	30-Jun	11-Jul	14-Jul	20-Jul	25-Jul	1-Aug	3-Oct	1-Nov	20-Dec
	ITA1	CTO1	CIO2	ITM1	ITE1	CIO3	CIO1	HOD1	HOD2	HOD3	HOD4
Frameworks and Models											
Customer Experience											
Value Chain Augmentation											
Business Viability											
Cost Structure											
Adaptive Capacity											
Review Technology Architecture											
Vendor Influence											

Table 6. Map showing saturation timeline

Based on the above table, post the third interview the participants raised similar sub-themes.

4.3. Overview of Results

4.3.1. Qualitative Codes

This research made use of the inductive thematic analysis to search for patterns in the data. The initial steps entailed reading through all the transcripts and coding the text based on the literature review, of this study while noting the types of sub-themes emerging. By, iteratively, revising the codes the researcher could merge similar codes to create a more manageable list of codes. The table below lists all the codes created.

Name	Name	Name
Business Capability	Differentiation (Lack Of)	Operational Disruption
Business Model	Differentiation (using Commodity Software)	Organisational Culture
Business Need	Digital Offering	Organisational Politics
Cloud Policy	Due Diligence	Organisational Readiness
Collaboration	Forced Commercial Engagement	Proof of Concept
Competitors (Existing)	Implementation Model	Risk (Organisational Reputation)
Competitors (New Entrants)	Integration	Role Player
Cost Model	IT Capability Limits	Standardization
Cost of Development	IT Infrastructure	Time To Market
Cost Operational	IT Migration	Value Proposition
Cost Saving	IT Security	Vendor Hosted Services
Cost Sunken	Legacy Systems	Vendor Lock-In
Customer Behaviour	Legislative Impact	Vendor Relationship
Customer Experience	Level of Control	
Customer Type	Level of Engagement	

Table 7. Qualitative codes

4.3.2. Qualitative Code Groupings

After reviewing and refining the codes, they were placed into groups. These groups were based on what seems to make sense logically.

Customer Experience		
Collaboration	Customer Experience	Digital Offering
Customer Behaviour	Customer Type	

Value Chain Augmentation		
Business Capability	Differentiation (Lack Of)	Proof of Concept
Business Model	Differentiation (using Commodity Software)	

Business Viability		
Business Need	Due Diligence	Time To Market
Competitors (Existing)	Operational Disruption	Value Proposition
Competitors (New Entrants)	Risk (Organisational Reputation)	

Cost Structure		
Cost Model	Cost Operational	Cost Sunken
Cost of Development	Cost Saving	

Adaptive Capacity		
Cloud Policy	IT Capability Limits	Organisational Readiness
Legacy Systems	Organisational Culture	
Legislative Impact	Organisational Politics	

Vendor Influence		
Forced Commercial Engagement	Vendor Lock-In	
Vendor Hosted Services	Vendor Relationship	

Review Technology Architecture		
Implementation Model	IT Migration	Standardization
Integration	IT Security	
IT Infrastructure	Level of Control	

Table 8. Qualitative code groupings

4.4. Qualitative Results

4.4.1. Frameworks and Models

The use of frameworks and models is extensive in participating organisations, and this section will discuss these in more detail. Within the participating organisations, there is reference made to Bimodal IT, the SMAC model, and the Pace-Layered Application Strategy.

Bimodal IT requires the organisation to split its IT department into two modes of operations. The first mode (mode-1) is where the IT is functioning as a conventional IT company. Here IT ensures the existing infrastructure, which the organisation relies on, is stable and reliable. The second mode (mode-2) is a non-linear IT capability and deals with the rapidly changing customer needs. These modes of operation provide the organisation with the ability to respond to competitors, using its mode-2 IT operation (Horlach, Drews, & Schirmer, 2016).

> ***"Gartner introduced that fact that IT works in two modes (the bi-modal mechanism). Mode-1 is engineered, structured, waterfall projects. All the new stuff we are building is mode-2…"***
>
> ***Source: HOD1***

From an executive point of view, some chief executive officers are aware of the organisation requiring the ability to respond to technology trends. One annual integrated report clearly states this, when looking at the following quote.

> ***"In addition, we aim to organise ourselves, our data and data analytics and information technology to enable differentiation in our clients' universe, respond more effectively to regulatory change and improve our ability to execute our strategy more effectively."***
>
> ***Source: ORG2***

SMAC is an IT model enabling the organisation to be more future fit by using different technologies, which allow the business model to transform (Gopichand, 2015). SMAC refers to using Social-media, Mobile, Analytics, and Cloud within the organisation, where each area affects the various stakeholders within the organisation. Social media is of importance to the business stakeholders, while mobile affect the customers. Analytics is important to the leadership within the organisation, and cloud influences the IT departments themselves (KPMG, 2014). Within the context of this study, various participants refer to the SMAC model.

> ***"We are changing all our analytics capability and because we realise you know you want to have to use social media that is the new trend. To know your customer better."***
>
> ***Source: ITE1***

Pace-Layered Application Strategy is a method of categorising applications in such a way that the organisation can respond to business needs. The organisation need to categorise application based on the usage within the organisation, which categorises the application as systems of records, systems of differentiation, or systems of innovation. Systems of records manage the master data and support core transaction processing of the organisation, which results in a slower pace of change with standardised processes. Systems of differentiation allow the organisation to adapt to business needs and these changes can occur regularly. Systems of innovation allow the organisation to deploy an ad-hoc application with a short lifecycle, which allows for the exploration of new business ideas (Gartner, 2012). Within the context of this study, participants know this application strategy and use it when deciding which application to deploy in a CC environment.

> ***"So from a system of records and engagement sites, any financial transactional data and identifying data that you could use to breach, the system of record, had to be [name of organisation]"***
>
> ***Source: HOD2***

4.4.2. Customer Experience

Customer Experience is the effect of the ever-increasing connected world. Customers encounter a good user experience in one industry and expect a similar type of experience in a different industry. This customer experience expectation compels organisations to consider new capabilities. For this research, the discussion focusses on the codes listed in the table below.

Relevant Codes		
Customer Behaviour	Customer Experience	Customer Type

Table 9. Codes relating to customer experience

Customer Type definition is important for these large organisations towards understanding the type of person they are dealing with. The people internal to the organisation (internal staff) are responsible for performing various business functions. The intermediaries who are the sales force of the organisation also require support. For them, the organisational solutions should assist them in selling and servicing their customer. Finally, the actual policyholder exists, who benefits from the service or product offered by the organisation. The policyholder deals either directly with the organisation or via the intermediaries. The primary customer types for participants is the internal organisation staff and the intermediaries. Almost no direct interaction exists between the policyholder and the organisation, and the intermediary maintains most policyholder relationships.

> ***"It is for our internal staff, who in turn service guys like you and I. So our portfolio managers will access the cloud solution."***
>
> ***Source: CIO2***

> ***"Our customer and our strategy are still very much around the adviser…and selling policies."***
>
> ***Source: ITM1***

> ***"In everything that we do, we start with that customer…So that they can have a seamless experience and then how do we use all these other things to drive that home."***
>
> ***Source: CTO1***

Turning to ***Customer Behaviour,*** it is important to understand the behaviour of these key customer types and their relationship with CC. For instance, ITA1 mention how the intermediaries are using SaaS to augment their service offering to the policyholder. The provider of these SaaS-based products is not always the organisation itself.

> ***"What intermediaries tend to do…they tend to actually download the information. The portfolio information that they have gathered, the research they gathered into Dropbox, and that syncs to their mobile device. When they at the client they can pull it up on their tablet they can show it to the client."***
>
> ***Source: ITA1***

Furthermore, ITE1 mention how the prevalence of social media and smartphones has made the internal staff and intermediaries well prepared for different user experiences, compared to what is currently available.

> ***"So you know what, I think that because of the change that we have had in social media and all the apps that are available out there. I think our customers and our staff are probably more ready for it than the actual people that are providing the infrastructure."***
>
> ***Source: ITE1***

Moreover, the expected customer experience is not specific to the insurance industry. Instead, these are industry-agnostic behaviours, such as having an application on a smartphone (mentioned by ITA1) or accessing files from anywhere (CIO2).

> ***"The convenience play is…I get access to all my documents all of the time…and cloud facilitates that."***
>
> ***Source: CIO2***

Contrary to these trends, the current policyholder demographic for participant organisations still prefers the existing operating model (CIO3 and ITM1).

> ***"The current policyholder demographic is not an on-demand demographic. They are very much a face-to-face traditional engagement demographic."***
>
> ***Source: CIO3***

Internal IT departments are not always able to provide the business solution need. Business units then create direct relationships with vendors to provide the required solution, which does not necessarily conform to the enterprise architecture standard.

> ***"So what actually happens and we had that in a number of scenarios where the business is actually dealt direct with other vendors."***
>
> ***Source: ITE1***

Substitution products are competing against the traditional big financial players in the current market. These new players provide niche products to the market, which forces the bigger players to relook their offering to the same market segment. One participant makes the following comment regarding substitution products.

> ***"We have a lot of new players ... and coming up with single products. It's not as if they have massive products. But they've just hit a sweet spot in the communities, and then it sells and then, of course, it takes away your market share in those particular environments. But it would be very specific, not a general issue across the financial services sector."***
>
> ***Source: ITE1***

Customer experience is an important consideration for participant organisations. Thus, everything the organisation does ties back to customer experience, to ensure the organisation is focusing on the right things (CTO1). Given the easy accessibility of online tools, the organisation is wary not to remove a capability from its customers when providing an organisation specific solution (ITA1). Customers are not concerned whether the particular solution is cloud-based. Instead, they are interested in how the solution eases the performance of a specific business function (CIO2). Furthermore, ITE1 expresses that the nature of their business differs from banking and therefore does not require the online transactional type of customer experience. In supporting this view, HOD2 notes how the cloud-based competitors pose a negligible business threat. This competitor view is based on customers wanting to experience long-term investment assurance, which the new entrants cannot offer. A quote from the annual integrated report for ORG7 indicates the organisation and its executive team is aware of the importance of customer experience.

> ***"We will ensure that we stay competitive in South Africa and keep growing as a market leader. Integral to this is simplifying and improving the customer experience."***
>
> ***Source: ORG7***

In summary, the feedback from participants describes their key customers as the staff internal to the organisation, and the intermediaries. Given the omnipresence of CC, there has been an impact on the customer behaviour, based on what is generally available outside of the investment services industry. This change in behaviour has given rise to substitution products geared towards a niche audience in the target market, compared to the broad range of products on offer from the bigger players in the market. Therefore, SaaS or CC, in general, influenced the expected customer experience, which compels the organisation to consider implementing various types of business capabilities.

4.4.3. Value Chain Augmentation

Value Chain Augmentation is capabilities, which are beneficial towards the value proposition offered by the organisation to its target market. Capabilities, which the organisation implements, is not dependent on the technology. Instead, the capability must be rooted in the contribution towards the value proposition of the business. For this research, the discussion focusses on the codes listed in the table below.

Relevant Codes		
Business Capability	Business Model	Proof of Concept

Table 10. Codes relating to value chain augmentation

Business Models define how an organisation execute its business and by extension how it will implement CC. HOD1 explains how CC could impact the business model of an organisation in one of two ways; either by extending the existing business model or by allowing the organisation to change their business model. However, ITE1 caution that a business model, which makes sense in one industry type, may not make sense in another. For instance, in the banking industry, many transactions are happening and having a mobile presence enables the customer to perform those transactions with ease. In contrast, the insurance industry is not as transactional, and the same level of mobility is not a primary consideration. This transactional view ultimately means a good understanding of the industry and the customer behaviour is required to make the correct choice regarding the type of CC solution to implement. The annual integrated report of ORG3 mentions how the organisation recognise the need to extend their existing business model to penetrate into new markets.

> ***"The opportunity to gain market share through new digital channels promises exceptional future growth potential in Africa, where many countries have leapfrogged traditional technology directly to mobile."***
>
> ***Source: ORG3***

Regarding current business models used; ITM1 explains how the preferred interaction model for policyholders, within their market segment, is the brick and mortar, branch model and face-to-face servicing. Furthermore, CIO3 and HOD1 emphasise how their business model proves to be very profitable and therefore have no compelling business case to warrant implementing changes to accommodate CC. HOD2 emphasise the simple business strategy of their organisation to focus on long-term investment, and as a result, CC is not a primary concern for innovation. In the same way, the organisation of CIO2 view technology as an enabler and uses their human capital as its differentiator in their target market. HOD1 explains that they are not changing their profitable business model. However, HOD1 is in the process of exploring alternative business models, which are launched as separate businesses. For these new business ventures, the organisation is exploring CC, evaluating the business viability of these new cloud-based business models. Given this view participants had regarding their business model and CC, it is important to understand how these organisations dealt with new capability requests.

Business Capability is any feature, which extends the value proposition of the organisation to its targeted market segment. The capabilities the participants mention is not a direct CC play, but instead capabilities, which happen to be available in the cloud. For instance, ITM1 is implementing an e-learning solution, based on an organisational need, and not because there is a SaaS-based solution that made technical sense. ITM1 further stressed this point with the following quote.

> ***"The people that I deal with, there is not saying 'Ok, SaaS is the way to go for us'. That is not our starting point for anything...It is always about a particular scenario, and the circumstance, that will dictate."***
>
> ***Source: ITM1***

According to CTO1, it makes sense to buy instead of building a product, which is not part of the strategic offering of the organisation. However, ITE1 expresses the need to retain some of the capability within the organisation to mitigate any risk when changing vendors. As far as productivity is concerned, ITA1 highlights that end-users would use SaaS-based solutions to be more productive, even if not available inside their organisation.

> ***"So, when we say we are taking back ownership, we've been looking at, for example, Microsoft Drive. If you get the corporate account of that…Then we can provide, that service to our intermediaries, and we can encourage them to use that."***
>
> ***Source: ITA1***

However, even though CC is providing various new ways of performing tasks, the participating organisations have no compelling reason to adopt CC, as it is not yet directly compromising their business models. Both HOD1 and CIO3 express this view, with the following quotes.

> ***"It is just plumbing."***
>
> ***Source: HOD1***

> ***"So from a point of vigilance we are looking at this and resilience, but we do not have right now burning business cases or use cases to deploy in the cloud."***
>
> ***Source: CIO3***

Proof of Concept is a valuable tool to experiment with a new capability, explore new market segments, or evaluate new business models and concepts. As an example, CTO1 explain how their organisation uses SaaS-based solutions in smaller proof-of-concept type projects to understand the extent to which a capability can be utilised in the larger organisation. Meanwhile, both CIO3 and ITE1 uses CC to build proof-of-concept solutions outside of the organisational infrastructure, because CC provides a fast way to prove the business value of a particular capability.

> ***"We have used Amazon and Google for that. So if we doing proof of concepts, we quite happily do that, in that space but it is very isolated."***
>
> ***Source: ITE1***

HOD2 explains how their organisation is using IaaS during the development cycle of their solution. Once the final user testing is complete, HOD2 moves the solution into a hosted environment with one of their existing trusted vendors. ITE1 shares the same view as HOD2 to bring the final solution back into the organisation and to run the solution on the organisation's internal infrastructure. Contrary to this, CIO2 is building proof-of-concept solutions, which they continue to use in the CC environment as the final solution.

In summary, CC provides a great way to explore new business ventures. However, new capabilities stem from a business needs and is not a technology consideration. Using CC as a way to build proof-of-concept solutions appears common amongst participants. However, the decision to continue using the proof-of-concept in the CC environment, post proving its viability, varies between organisations. The next consideration for participants relates to the business viability of a particular capability.

4.4.4. Business Viability

Business Viability considers whether a capability aligns with the overall business strategy of an organisation. A further consideration is given to the impact on the organisation and the benefits realisation to the service or product, which is provided to a target market. For this research, the discussion focusses on the codes listed in the table below.

Relevant Codes		
Business Need	Time To Market	Value Proposition
Operational Disruption		

Table 11. Codes relating to business viability

Business Needs vary between how to interact with customers and the ability to solve internal process related issues. The business need is supporting an organisation towards competing within their chosen market. It is therefore not be driven by a need to implement CC. For all the participating organisations, the ability to use of CC is consequential and not the end goal. For instance, CIO1 is dealing with latency issues for their international branch. To address this issue CIO1 considers implementing a PaaS-based solution. However, CIO1 cannot confirm whether the chosen PaaS-based implementation resolves their latency issue. Another example is HOD2 who is standardising their organisational data by implementing a standards framework. This solution is not cloud-based and is a need in the business to have a single source of truth, for their data. HOD2, however, mention how the consequence of the data standardisation will ease their integration into their SaaS-based customer relationship management (CRM).

In the case of ITE1, the organisation is expanding its footprint into Africa. By using a SaaS-based solution, the organisation minimises the operational cost of the African expansion. In this scenario, the need for CC is based on keeping the operational cost of these African operations low. Running the low-cost African operations inside the larger organisation prove to be expensive. In the same way, ITM1 is using an internally hosted SaaS-based e-learning system to reduce their training cost for more than three thousand intermediaries working for the organisation. HOD1 and HOD2 maintain that their organisations are reputable within their respective markets, and do not need to dramatically change their existing business strategy to accommodate the new entrants. Furthermore, ITA1 reiterates how their business requires solutions, which can span over the lifetime of the products being sold, which can last more than forty years. It is for this reason that the business need requires evaluation to understand its value proposition.

Value Proposition is the benefit a particular solution provides and provides an indicator of whether a particular solution is worth adopting into the organisation. Adopting CC requires the organisation to understand the cohesion between the various technologies and use what makes business sense. For instance, ITA1 recognises how running their infrastructure requires effort and can distract the organisation from focusing on adding value to the customer. Therefore, adopting IaaS can ease this burden for the organisation. ITE1 expresses the same view, and deem the use of IaaS and SaaS as a way for the business to focus on value-added services for their target market. However, not all participants share the same view.

Those participants with more exposure to cloud implementations experience cloud services as more expensive compared to running a similar service internally. HOD1 and CIO1 share this view towards cloud services. Due to the size of their organisations, running software solutions on their infrastructure is more cost effective, compared to IaaS and PaaS. Similarly, CIO3 cannot justify the cost of cloud services to counter industry competition. In fact, CIO3 sees no strategic value, which CC provides and is therefore not actively adopting CC. HOD2 and CIO2 recognise that their end-users do not care whether a solution is cloud-based, but instead about the business value a particular solution provides. Once the value proposition is established, participants consider the time to market of any new venture or solution.

Time to market of business capability is important to the participants, and SaaS-based solutions provide the necessary acceleration. SaaS-based solutions can assist organisations on two levels concerning time to market. The ***first level*** relates to the internal IT capabilities. Here, CIO2 and ITA1 explain how the ability to buy a capability, enables them to shorten their time to market, by not having to invest time and resource into development. Similarly, CIO1 require a shorter timeframe and lesser skillsets to implement their SaaS-based solution. While for HOD2, cloud-based services allow them to compete better against a competitor and move towards leading within their market segment. The ***second level*** relates to the business or end-user of the organisation. Here end-users of a particular solution also derive business value much quicker by utilising SaaS-based solutions. Similarly, ITE1 uses a SaaS-based solution to fast track their footprint expansion into new market territories. Similarly, CIO2 mention how the primary concern for end-users is a quicker turnaround time of business value, which SaaS-based solutions offer. For these end-users, the fact that the solutions are CC is immaterial. After considering all these points, the organisation still needs to ensure no operational disruption for the organisation.

Operational Disruption is an important consideration for the participants to ensure their respective businesses are not disrupted due to technology. ITA1 and HOD1 explain how they optimise their data centres to ensure reliability and uptime of the business critical services. Organisations, therefore, need to ensure they mitigate any risk associated with a security breach or disruption to business operations. To achieve this, CIO2 apply their internal security to data content being shared with external SaaS providers. In contrast, the organisation of ITA1 forbids any solution to execute in their environment, without going through an architecture approval process. Enforcing the approval process safeguards the stability of the business critical services. Therefore, CTO1 stresses the need to ensure the organisational architecture can deal with any known disruptions. Organisations, therefore, need a clear understanding of the value chain impact, should the cloud-based service become unavailable. CTO1 highlight how cloud availability is the highest risk when considering a CC solution as part of the business value chain. Both CIO1 and CTO1 agree that IaaS, or CC in general increases the risk to their operations.

ITE1 express how IaaS provide organisations operational efficiencies but caution the organisations to be aware of the contracts associated with cloud vendors. This awareness stems from vendors providing favourable contract rates during the first contract period and increasing the price considerably upon contract renewal. These contract changes are with full knowledge that the organisation made a significant investment in the vendor-supplied solution. CIO1, CIO3, and HOD2 has a similar view and share how the cost of their new Microsoft Office 365 cloud-based solution is more expensive than hosting it within their infrastructure. Next, CIO3 express how cloud provides more risk because implementing any new solution in a large organisation takes time. CC has more frequent release cycles, of the cloud-based solutions, compared to the long deployment cycles within large organisations. CIO3 share how the organisation is paying for solutions, which the organisation never uses.

In summary, participant organisations consider the business need for any particular capability introduced into the organisation. Once a capability is identified, the organisation assesses the value proposition of the new capability. Time-to-market plays an important role, to ensure the organisation can reap the rewards of the new capability. There is also an awareness of the operational disruption, which the new capability may introduce into the larger organisational infrastructure. As a next step, the cost structure of new capabilities needs consideration.

4.4.5. Cost Structure

When considering any initiative, certain costs are considered. Cost can be associated with the production of the solution, or the factor prohibiting the implementation a particular solution. The data collection revealed five types of cost which the participating organisations considers, namely; Cost Model, Development Cost, Operational Cost, Cost Savings and Sunk Cost. Of these areas of cost, most feedback relates to Cost Savings and Operational Cost. For this research, the discussion focusses on the codes listed in the table below.

Relevant Codes		
Cost Model	Operational Cost	Cost Saving

Table 12. Codes relating to the cost structure

The **Cost Model** of IT, within an organisation, is a persuasive factor when considering CC. ITA1 and ITE1 explain how the cost of infrastructure is shared amongst all business units consuming the infrastructure. HOD1 explain how business units buy a service or capability from the internal shared-service provider, within the organisation. Using these internal providers, therefore, places a constraint on the cost and type of services available. In fact, when ITE1 extended the organisation footprint into an African country the IT cost within the organisation shared-services became prohibitive. This cost hindrance led to implementing a SaaS-based solution to reduce the IT cost for the market expansion into Africa. In contrast, CIO3 maintains CC only makes sense where the organisation has constraints with working capital. CIO3 and ITE1 highlight the accounting practice of asset depreciation, which enables the organisation to a show return on investment. The monthly payment for CC, coupled with the associated contracts only creates unnecessary administration overhead (according to CIO3). By understanding the cost models within organisations, the next step is looking at how to deal with the operational cost.

As for **Operational Cost,** the participants have opposing views regarding the cost associated with maintaining their own data centre. Developing new business solutions onto these existing platforms creates an unnecessary burden on the organisation if the particular business solution no longer becomes feasible to the organisation.

> ***"Our annual operating cost for this failed venture was in the region of 10 million rand. Just to keep the solution running per annum. And, we were getting nowhere near that in new business volume."***
>
> ***Source: ITA1***

Operational cost is one reason some participants (CIO1, CIO2, CTO1, and ITA1) prefer outsourcing their infrastructure, thus removing the burden of maintaining the infrastructure themselves. However, CIO3 and HOD2 maintain large organisations have the funds to maintain their infrastructure. Furthermore, ITE1, ITA1, and HOD1 shares how the infrastructure cost, within large organisations, is split amongst the various business units. The cost sharing discourages business units to move off the shared platform, and negatively influence moving business capabilities to a CC environment. Also, organisations buy infrastructure for a five-year period, and the organisation grows into the infrastructure. These factors require a further understanding regarding expected cost saving.

Cost savings carry different meanings to different participants. The level and type of cloud implementation, by participants, play a role when attempting to understand the cost implications. There are participants with limited cloud implementations and therefore expects potential savings realisation. In contrast, the participants with a higher level of CC implementation raise the concern regarding the high cost of CC. In some instances, the CC service is more cost effective if hosted by the organisation infrastructure. Participants with limited cloud implementations make the following types of comments.

> ***"It will help to drive down your operational cost."***
>
> ***Source: ITA1***

> ***"I do think it will probably be cheaper."***
>
> ***Source: ITE1***

While participants with more extensive cloud implementations make the following types of comments.

> ***"Is there a cost advantage to SaaS? No, not necessarily, our new Microsoft agreement is costing us more, and we have to give them up front commit, of how much of the online packages we are going to use"***
>
> ***Source: CIO3***

The cost implication on the policy transaction or providing the service is also a consideration when adopting CC (ITM1, CTO1, and ITA1). Furthermore, the organisation incurs a monetary loss due to ineffective operational staff (ITE1). Still, there is a view that cost is not an issue for a large organisation since they have the funds to roll their own (CIO1, CIO3, and HOD2).

In summary, the cost in large organisations is multi-faceted. Organisations ensure they have a good understanding of the factors affecting their cost towards producing and servicing their product. The cost model within the organisation plays an important role and affects the operational cost. These factors contribute towards understanding the tangible cost savings the organisation can realise. Given the cost structure, it is important to consider the adaptive capacity of the organisation.

4.4.6. Adaptive Capacity

Adaptive Capacity is the ability of the organisation to adapt to new technology, given the current operating environment. This section considers the organisational readiness and potential impact when implementing a CC solution. For this research, the discussion focusses on the codes listed in the table below.

Relevant Codes		
Organisational Readiness	IT Capability Limits	Legacy Systems

Table 13. Codes relating to adaptive capacity

Organisational Readiness for CC requires alignment between technology and business. This alignment requirement is due to the changes in both business processes and technology when implementing CC in an organisation. From a business perspective, the organisation may no longer require a certain skill set, or there might be less demand for a particular skill set.

> ***"So you do not have servers to manage. I mean one of the companies that we deal with, they run completely on Google business ... there is no file-servers to manage. So, before where you needed one person to do that, now you do not need anyone."***
>
> ***Source: CTO1***

Educating fellow executive colleagues within the organisation helps prepare the organisation to adopt CC. CIO2 is achieving this by regularly sourcing and preparing research papers on CC. By comparison, HOD2 is on a two-year journey towards preparing the organisation to adopt CC. Embracing CC requires small incremental changes when delivering IT solutions to business, thus getting buy-in from the broader organisation. However, the organisation culture or policy can inhibit an organisation towards becoming CC ready.

> ***"If we had to do a wholesale move of infrastructure to the cloud, platforms to the cloud…that we would probably have to make one or two people redundant, and the company tends to take that quite seriously. The company does not like to do that."***
>
> ***Source: ITA1***

All participants recognise that changes are required within their respective organisations to embrace CC fully. An unwillingness to make the organisational changes can prevent the organisation from taking full advantage of the CC capabilities.

> ***"But we have not really got our own house in order, from an IT perspective and there are hindrances to getting that moving."***
>
> ***Source: ITA1***

CIO3 raises a concern regarding the organisation not always being change-ready. Therefore, adopting a cloud-based solution may not provide added benefits compared to having the same solution on the organisation's internally hosted solution. Another concern is integrating CC into the legacy IT platforms and legacy financial products (highlighted by HOD1). Within the organisation of ITE1, there is a practice of having detailed knowledge of the platform provided for a business solution. ITE1 realises this mindset needs to change when moving into a CC environment. Of equal importance to organisational readiness is the limitation, which exists within the IT capability of the organisation.

IT Capability Limits influences the adoption of CC within participant organisations. The factors influencing adoption includes the current IT architecture and existing service agreements. For instance, the existing IT department of ITA1 is not designed around having the capabilities and data in the cloud, and by extension outside the organisation. The organisation of HOD2 has a similar view, and their legacy IT systems play a big part of their infrastructure with specific upgrade paths.

> ***"We are a mature organisation, in terms of IT, and IT relationship with the business side. Our systems are very mature. The same systems have been incrementally developed...Even us moving to the cloud is just an evolution of the existing system."***
>
> ***Source: CIO1***

Besides these issues, there is also a sense that moving to the cloud has made no commercial sense for these larger organisations, as expressed by HOD1. Furthermore, ITE1 explains the importance, within their organisation, to know how and where infrastructure resources are made available.

> ***"We do not necessarily just spin up into the ether ..."***
>
> ***Source: ITE1***

Due to all the systems and infrastructure on which the larger organisations are reliant, the priority is placed on ensuring the availability and reliability of the organisational infrastructure. CIO3 shares this view and reiterates that the infrastructure for large organisations is built for a specific purpose. In addition, the focus of their IT department is on meeting operational service level agreements.

> ***"We are more interested in meeting operational SLA's, in terms of uptime and performance."***
>
> ***Source: CIO3***

Legacy financial products and legacy IT systems is an important consideration for participants. This consideration results from their large IT infrastructure, with interconnections between the various systems to provide the value-added services required by the organisation. According to CIO2, the complexity around subscribing to CC depends on the level of integration back into the organisation. Added to this, CTO1 explains how the organisation needs to review the existing architecture of their applications to realise the benefits offered by CC.

> ***"One thing that prevented us from moving all of that into the cloud was that we still run in a kind of a hybrid mode ... there is a lot of dependencies in the way we set those platforms up that prevent us from moving fully into the cloud. But, it's a case where we just need to unwind some of those dependencies, to move."***
>
> ***Source: CIO1***

The reason for these legacy systems is rooted in the business needs of the organisation. In the investment services industry, the products sold have a lifespan of years, which the organisation needs to maintain, to honour the investment agreement with the policyholder.

> ***"Unfortunately, in insurance, these products last 30 years, and you stuck with them. You cannot just stop supplying that product to someone. You have made a promise to someone, that you are going to pay them in 30 years' time. You stuck with it, whether you like it or not"***
>
> ***Source: ITE1***

Therefore, a normal practice for a project inside the organisation is to spend large portions the project budget on ensuring there is integration between the legacy system and the new solution. Here is what ITA1 shares regarding project costs.

> ***"We spent a lot of money building it, and big chunks of that project were on building the back-end integration into our product platforms. 20 -30 % of the product."***
>
> ***Source: ITA1***

The reality for large organisations is they have to deal with legacy systems, due to financial products being administered on their systems. An approach CIO1 takes requires incrementally enhancing the existing infrastructure as the technology, and business needs evolve, within the organisation. HOD1 cautions how their problems are a result of not renewing their infrastructure on a regular basis, which makes it harder to migrate to a CC environment.

> ***"So from a strategy point of view, we are not choosing to go in-house first. Our reality is in-house. So it is a choice that has been made for us, due to the fact that we have not renewed some of the stuff in the last 20 years."***
>
> ***Source: HOD1***

In summary, organisations need to understand their organisational capabilities and the factors, which prohibit moving to a CC environment. Some factors include organisational readiness, which considers the alignment between IT and business to create an organisation, which is change-ready. Another important factor entails understanding the IT capability and skill set within the organisation. The capability to support the legacy financial products and services, of the organisation, is another contributing factor towards adopting CC. All these factors suggest reviewing the technology architecture on which the organisation relies.

4.4.7. Technology Architecture Review

Careful consideration is required when attempting to implement new technology into large organisations. Furthermore, the existing architecture of the organisation may not be CC ready and require revision. For this research, the discussion focusses on the codes listed in the table below.

Relevant Codes		
IT Infrastructure	Integration	IT Security
Implementation Model		

Table 14. Codes relating to technology architecture review

IT Infrastructure of large organisations is complex and consists of several moving parts that are aligned to act as one cohesive unit. By employing various strategies, this cohesive unit is optimised to provide the expected business in the organisation.

> ***"We concentrate our enterprise solutions into large monolithic solutions that meet the requirements of the entire enterprise."***
>
> ***Source: ITA1***

The application architecture also requires revision as some applications consist of legacy programming languages and potentially need to be ported.

> ***"We have a bit of the old legacy VB6 code, and we have got C-sharp code, and now we trying to develop a more web-based front-end."***
>
> ***Source: CIO1***

As a result, any change made to the IT infrastructure must satisfy the needs of the whole organisation.

Integration is a big part of the IT architecture. Within the organisation, various forms of integration exist between the systems to perform a specific business function. Furthermore, organisations already have integration with external entities, either via some form of file transfer or web-services. Some participants mentioned that this existed before CC became hype. When considering CC integration, or any form of systems integration, it is important to be clear on the level of integration required to provide the needed business value.

> ***"I don't think integration is an issue. You can integrate into anything that has been proven over the years. We have web services access to our mainframe. I think the question becomes the cost of that transaction the speed of the transaction and the type of experience trying to present to the client. If that type of experience it going to be possible by that integration."***
>
> ***Source: CTO1***

Similarly, the integration between the various systems in these large organisations requires revision to ensure a service-oriented architecture that is cloud ready.

> ***"When I joined, we started changing the architecture so that it is services oriented. Therefore, we started exposing everything as services, not having these linked databases, and mapping tables. We currently have a lot of services. That made us cloud-ready, and it was part of the strategy, and from there moving to the cloud is extremely simple."***
>
> ***Source: HOD2***

Moving to CC is not simply using one or two small SaaS capabilities in isolated areas or business units. For the participants, it means these SaaS capabilities properly integrate into their existing infrastructure. For instance, HOD1 have realised that their organisation need to do a full migration to CC, after an initial investigation. Such migration is neither feasible nor technical possible for the legacy systems.

> ***"We did lots of evaluation and investigation, and most probably not. You have got to move the whole thing, and the whole thing does not work there."***
>
> ***Source: HOD1***

IT Security remains a concern for large organisations. Those using SaaS apply various internal security measures before sharing information with the cloud provider. These measures include not sharing the actual client details and instead only providing a single key from which only the organisation can internally link it back to the client. Other measures include ensuring that the organisation's data is stored in a completely separate database. Even with these measures in place, participants all concede the cloud provider is more secure than their environments.

> ***"One of the things of the cloud providers is their reputation. If they are hacked, they've got a major problem, so that is why they put way more effort into security, for instance. So it is much more mature."***
>
> ***Source: HOD2***

The **Implementation Model** within participant organisations is lengthy. In contrast, the solutions using a CC model evolves at a rapid rate. CIO2 explains how the procurement of hardware for a project, into the organisational data centre, can take up to six months and only then can they start using it. Part of the delay is the change control boards and due diligence required for any change to the IT infrastructure. These practices ensure the reliability and stability of the organisational infrastructure. Also, these organisations are large and deploying any solution takes time.

> ***"It takes a long time to deploy, so we don't get around. Our agreements are three years long, right. My point is we bought software from the last software agreement. Where it was on premise, but we haven't deployed everything that's in that software agreement, because it takes a while to get around to people."***
>
> ***Source: CIO3***

In summary, organisations adopting CC starts with reviewing the existing organisational infrastructure. The infrastructure of these large organisations is highly integrated using various forms of integration. As a result, the organisational infrastructure is optimised to be reliable and stable. On top of this, security remains a major concern and organisations first apply their layer of security before integrating into CC services. Finally, the implementation models in these organisations favour maintaining the stability and reliability, which can delay implementing any new solution.

4.4.8. Vendor Influence

Vendor influence can play a vital role when a business embarks on implementing a CC solution. Vendors can influence the final solution the organisation chooses to realise a specific value proposition to its market segment. For this research, the discussion focusses on the codes listed in the table below.

Relevant Codes		
Vendor Relationship	Forced Commercial Engagement	Hosted Services

Table 15. Codes relating to vendor influence

Vendor Relationship plays a big role in participating organisations because the vendors become trusted partners. However, the relationship results in vendors having a huge influence regarding the type solutions bought or developed by the organisation. The participants suggest the vendors operate in one of two modes. The first mode is in-sourcing, and the vendors form part of the organisational staff. While the second mode is outsourcing and the organisation only use the vendor service or product. In this mode, the vendor does not form part of the organisation. Adopting CC influences these operating modes and changes the nature of the conversation when renewing vendor contracts.

> ***"It will change the conversation. It will change the conversation from a billing point of view, from provision point of view, from the response, from a security point of view. It will change the conversation fundamentally."***
>
> ***Source: CIO3***

In some instances, the influence causes the vendor contract to terminate, as the service is no longer required. The reason might be that the new CC solution replaces the service of the vendor, or the vendor is unable to contribute any value-added service to the CC solution.

> ***"We have terminated a lot of contracts because we do not require their service anymore. It was partly due to the cloud."***
>
> ***Source: HOD2***

However, some organisations prefer vendors, to internal staff, because there would be a service-level contract in-place, which allows for recourse in the event of a breach of contract. For some participants, this strengthens the case for CC.

> ***"When you go into business with an outsource partner there are legal service level agreements included that has a financial impact. So if the service provider is doing something and it's their fault you know they pay a penalty ... Whereas if it is in-house, you are bearing that cost, because you can't really take your infrastructure to court."***
>
> ***Source: ITE1***

Hosted Services is another important role player for participant organisations. These services are not part of the organisation's core focus, or the hosted service provider provides the service at a superior level. Providers of hosted services are trusted partners of the organisation, and the organisation might even require a new vendor offering a SaaS-based product to host the solution in the hosted environment.

> ***"So we don't have a problem with hosting [product-name] in the cloud. It was where they wanted to host [product-name]. [cloud-provider] was the problem for us. We said that [cloud-provider] wasn't good enough ... At least we half in bed with [hosted-service-partner], and that is what's happening now. They are hosting with [hosted-service-partner], we own the relationship with [hosted-service-partner]"***
>
> ***Source: ITM1***

Infrastructure provision is, however, not the only role, a hosting service provider play within organisations. For some participating organisations, the hosting service provider performs key business functions.

> ***"The only thing we outsource is our unit trust administration … We use external agencies; they are called transfer agencies, in the industry … We don't hand-over everything to them. We've built our own systems, so all they do is look after the unitholders or our unit trusts and send them reports if they need … We do not outsource everything."***
>
> ***Source: CIO1***

However, HOD2 cancelled their services with their hosting partner, to align their IT architecture to CC.

> ***"The next one was big steps towards enabling the cloud inside [organisation-name]. One of the transfer agencies we brought that in-house."***
>
> ***Source: HOD2***

Forced commercial engagement means the organisation has no option whether to deploy a solution on-premise or in the cloud. Alternatively, internal staff members force the organisation into a CC agreement due them informally using the service. For some organisations, this is the first time they consider CC.

> ***"We need a capability and the company that is offering it; they host with Azure. So I think it was like, 'ok, you know it is fine, we be ok with that'. It's probably about time that we look at Azure."***
>
> ***Source: ITM1***

In one scenario, the vendor solution would perform sub-optimal when deployed within the infrastructure of the organisation. The result is finger pointing and much frustration for both the vendor and the organisation. Some vendors, subsequently, no longer provide on-premise solutions and only provide cloud-based solutions.

> ***"What we find with a couple of our vendors was they said: Right what we are going to do are we are going to move this into our environment. We are going to design the technology either infrastructure in accordance to our technology, and what we believe it's best suited to run on. We are not going to offer on-premise anymore. You guys must move into the cloud if you want to use the system."***
>
> ***Source: CIO2***

Another scenario entails staff of the organisation using a particular SaaS-based product. The product provider notices how the number of users from the same email domain is using their service. Thus triggering the product provider to approach the organisation and demand the organisation buys a commercial license. This licensing demand stems from the number of users from the organisation's email domain exceeding a particular threshold. ITA1 is facing such a scenario in the organisation.

> ***"Our intermediaries have inadvertently committed ourselves to a commercial engagement...there is an investigation underway to try and find a real commercial alternative because we can't just roll over, and be high-jacked by these vendors. Because, well, you've been held hostage, dare I say."***
>
> ***Source: ITA1***

In summary, vendors can exercise substantial influence over whether participant organisations use CC. This influence stems from the vendor relationship, which the vendor builds with the organisation. Hosted service providers are vendors who have a significant influence on the decisions the organisation make. As a result, there can be a forced commercial engagement where vendors dictate to organisations to use CC, even if the organisation is not considering CC.

4.5. Summary of Chapter

SaaS is influencing the customer behaviour and force organisations to re-evaluate their use of CC. Therefore, CC influences the expected customer experience from organisations. A great customer experience requires the adoption of new capabilities within the organisation and CC provides a great way to explore these new business opportunities. However, capabilities are adopted based on the value-add to business and not because the capability is using the latest technology. CC provides great opportunities for the organisation to implement proof-of-concept business ventures, with minimal impact on the existing business operations. Given these benefits, the viability of the business venture requires evaluation.

Any new CC capability, brought into the organisation, should have a value proposition with an expected time to market. To realise a new CC capability requires understanding the multi-faceted organisational cost structure. The organisational cost model and operational cost are important factors to determine any cost savings realisation. Any risk to the organisational operations needs identification, and their business impacts understood. Following these factors, the adaptive capacity of the organisation needs evaluation to accommodate the new CC capability.

Understanding the existing organisational capabilities provides a good view of the factors, which prohibit moving to a CC environment. For instance, the level of alignment between business and IT is important, coupled with the change readiness of the organisation. In addition, legacy financial products and legacy IT systems can limit the current IT capability within the organisation. Next, the architecture section highlights how the IT architecture of the organisation might need revision.

A technology architecture review might be required for large organisations where there is a multitude of interconnected systems. The infrastructure of these large organisations is optimised for stability and reliability coupled with a high level of integration. Security remains a major concern with organisations taking extra security steps when integrating into CC services. These additional security steps ensure the anonymity of policyholders. In addition, the implementation models in large organisations ensure the organisational infrastructure remains stable and reliable, which can delay implementing a new solution.

The influence of vendors on organisational decisions is an important factor. Vendors, in large organisations, become trusted partners and therefore influence the solutions into which an organisation invests. For instance, vendors can influence whether a participant organisation uses CC. Consequently, are scenarios of forced commercial engagement where the vendor dictates how an organisation uses CC, even if the organisation is not considering CC.

5. Discussion

This chapter will discuss the findings and adopt the following approach. To start it requires a revision of the research topic, of this study, followed by a discussion around each aspect of the research topic. A discussion follows to establish a link between the data findings and the literature review of this study. The aim is to provide sufficient insight to address the research objectives.

5.1. Discussion by Research Topic

This research objective is to describe and explain the factors compelling large South African investment services organisations to adopt CC. The main topic of this study is, therefore: "understanding the business strategy factors that either support or impede moving business capability to a cloud environment". This section separates the research topics into Business Strategy Factors, Factors Supporting CC, Factors Impeding CC, Business Capability, and Cloud Environment. A discussion now follows for each of these areas, in relation to the qualitative findings.

5.1.1. Understanding Business Strategy Factors

This research requires an understanding of the business strategy factors of an organisation. Based on the literature review, this research considers the four business strategy factors of industry structure, strategic position, strategy mode, and strategy execution. A discussion now follows for each factor in relation to the data findings.

Industry structure is important when evaluating the profitability of a particular target market. As a result, an organisation needs to consider the customers, vendors, new entrants, substitution products, and industry rivalry of its target market (Porter, 2008). The sub-themes resonating most with these are Customer Experience and Vendor Influence. Regarding **customer experience**, this study finds CC provides the flexibility to work anywhere and anytime similar to the findings of Brender and Markov (2013), which shows the omnipresence of broadband networks give rise to a change in working habits of staff and the level of collaboration expected. This study also finds **vendor influence** plays a vital role towards participating organisations adopting CC. Furthermore, organisations regard their vendors as trusted partners. This partnership supports the view of Gingras (2006) who states IT plays a utility role in some organisations and can be outsourced.

Strategic position requires the organisation to decide whether to play a prospector, defender, or analyser role when business conditions change for the target market (Miles et al., 1978). However,

value chain augmentation highlights the view from participants that CC does not influence the strategic position of the organisation. This contradicts the findings of Khanagha, Volberda, and Oshri (2014) who shows CC change the market position of an organisation. The participants in this study view CC as an enabler, and not the differentiator, for the organisation, which concurs with the findings of Bartlett and Ghoshal (2002) that the efficient use of IT does not guarantee business success, but instead relies on the human motivations and social interactions.

Strategy mode is an important consideration for organisations when competing within a market segment and can be a competitive advantage (differentiation or cost) or competitive scope (Porter, 2008). The ***value-chain-augmentation*** sub-theme show participants do not view CC, and the associated CC business models to influence their existing competitive advantage, within their target market. This business view relates to the study of McGarth (2010) who shows competitors can copy business models, therefore, reducing the timeframe over which an organisation has a competitive advantage.

Strategic execution of a business venture falls into one of three levels, which can be strategic, operational, or tactical (Dettmer, 2003). For the participants of this research, adopting CC raises concerns regarding the **adaptive capacity** of the organisation. There are changes CC will introduce into the organisation for which the IT department needs to prepare itself. The findings, therefore, reflects the change management consideration the literature review section of this study highlights (Bartlett & Ghoshal, 2002; Bhatt et al., 2010; Khajeh-Hosseini et al., 2012).

In summary, the section intends to find the relationships existing between the business strategy factors and CC. The data reflects CC influence the strategic thinking of participants given how CC has been the catalyst for capabilities, which organisations might consider. However, CC itself is not a differentiator for participants and therefore does not influence their strategic position or strategic mode of operation. The strategic execution of CC, within the organisation, is required to establish the critical change management.

5.1.2. Factors Supporting Cloud Computing

This section explores how the data findings support initiatives, within an organisation to move towards a CC environment. From a **customer experience** point of view, the study finds CC plays a catalyst role, which compels the participating organisations to evaluate their current product or service offering. The **value-chain-augmentation** sub-theme shows the participating organisations uses CC to implement their proof-of-concept business initiatives, which correspond with the study of Zhou and Wu (2010) showing IT can enable an organisation to exploit new business opportunities. The **business viability** sub-theme shows how participating organisations are experiencing an accelerated time-to-market when they use SaaS-based solutions. However, as the study from Cannon and Summers (2014) show, the organisation must understand the external factors that may act as a barrier towards realising the business value through CC.

5.1.3. Factors Impeding Cloud Computing

This section explores how the data findings reveal factors, which impede moving business capability to CC. The **cost structure** sub-theme shows the existing cost-model, within participant organisations, does not support using CC as it favours the existing technology set available to the organisation. This cost model restriction contradicts the study of Brender and Markov (2013) who shows the growth experienced by CC has made it a viable alternative, compared to the existing IT infrastructure, which exists within organisations. The **adaptive capacity** sub-theme shows integration into legacy solutions and legacy financial products impede moving to CC, which reflects the study of Khajeh-Hosseini et al. (2012) showing managers within an organisation need to consider the interconnected nature of their technology infrastructure.

From a **value-chain-augmentation** perspective, the data findings show the existing business models have remained profitable and are not under threat by CC. This profitability contrasts the study of McGrath (McGrath, 2010), who argues an organisation should experiment with their business model to remain competitive within their chosen target market segment. The **business viability** sub-theme highlights a concern amongst participating organisations regarding operational disruptions, which could be a side effect of adopting CC. The study by Bhatt et al. (2010) supports the operational disruption concern and shows CC has a complex technology set which requires the organisation to implement the required change management.

5.1.4. Understanding Business Capabilities

Participants in this study consider various business capabilities, which could be beneficial to their organisation. Based on the data findings CC only plays a catalyst role and is not the primary capability. The **frameworks and models** sub-theme, show participants have started a journey of applying the pace-layered application strategy as a framework to clean up their existing infrastructure and becoming CC ready. There is a strong sense amongst the participants to evaluate the analytics capability offered by SaaS-based solutions, which relates to the participants considering aspects of the SMAC model. The relationship between CC and business capabilities lies in the ability of a cloud-based solution to allow the organisation to share ideas amongst the stakeholders and find new and innovative business initiatives. These findings concur with the study of Ward and Peppard (2016) showing IT can contribute on a strategic level by allowing the organisation to share, produce, enable, and augment its existing business.

5.1.5. Understanding the Cloud Environment

This study shows how large organisations classify CC adoption. For participating organisations, CC adoption entails a full integration of the CC capability with the rest of the organisational infrastructure to provide the expected business value. When only a single business-unit uses a SaaS-based solution, participants do not regard it as the organisation adopting CC, if not integrated into the larger organisational IT infrastructure. However, the data analysis shows through the **technology-architecture-review** sub-theme how participating organisations optimise their infrastructure to be stable and reliable. This prioritisation results in an organisational infrastructure which delays implementing any new value-added business solution. It appears from the **frameworks and models** sub-theme that the participating organisations are in the initial stages of implementing the bi-modal framework, which will facilitate the continuous change in business needs. A similar study by from Nöhren et al. (Nöhren et al., 2014) shows IT, which match the organisational needs at the outset, becomes a mismatch over time due to changes in the business environment.

5.2. Factors Influencing Cloud Computing

The literature review of this study uncovered various factors, which an organisation should consider when adopting new technology, such as CC, into their existing infrastructure. The discussion will address the literature review in relation to the data findings. Sub-headings here will relate to areas of Business Strategy, IT Strategy, Business and IT Alignment, CC Strategies, and Organisational Impact.

5.2.1. Business Strategy

In this study, the ***customer experience*** sub-theme shows the customer base, of participating organisations, still prefers face-to-face interaction and CC is not playing a vital role. The ***value-chain-augmentation*** sub-theme shows the business models of participant organisations have remained very profitable, thus weakening the case to change their existing business models to accommodate CC. In the same way, the ***business-viability*** sub-theme shows the substitution products offered through CC is niche products, compared to the boutique of products offered by participating organisations. The ***cost structure*** sub-theme shows industry rivalry is combated through the existing cost models and policies within participating organisations and CC can help to minimise operational cost but does not contribute towards business profitability. The ***vendor influence*** sub-theme illustrates vendors using CC to their advantage to force participating organisations into adopting CC. These findings correspond to the five forces of competition by Porter (2008). However, the data analysis shows a weak relationship between the competitiveness of participating organisations, which means CC, has a minimal impact on their industry structure.

The **strategic position** for participating organisations resonates with being an analyser. The ***value-chain-augmentation*** sub-theme show participating organisations uses the strength of CC to build proof-of-concept business ideas. At the same time, the ***cost structure*** and ***technology-architecture-review*** sub-themes show participating organisations defending their current market positions by optimising their organisational infrastructure. When comparing these findings to the study of Miles et al. (1978), the alignment is to an analyser.

Organisations are required to choose a **strategy mode** when competing in a market segment, which is a competitive advantage (differentiation or cost) or competitive scope (Porter, 2008). The strategy mode is an important decision for any organisation to be successful in their chosen market segment. Based on the data analysis, the researcher could not find sub-themes, which support strategy mode and will therefore not discuss it.

Strategy execution is vital towards realising the business value envisaged by the business strategy. In this study, the ***adaptive capacity*** sub-theme shows how, on a strategic level, executive managers are receiving education about CC. Meanwhile, the ***business viability*** sub-theme illustrates CC contributes to the operational and tactical execution. In the same way, the study of Dettmer (2003) shows executing a business venture falls into the levels of strategic, operational, or tactical. Findings from the data analysis indicate organisations use CC on an operational and tactical level, and participating organisations do not view CC as a strategic option.

5.2.2. IT Strategy

In this study, the IT strategy of participating organisations plays a utility role, which enables the organisation to explore new products and services. Based on the findings, the ***cost structure*** sub-theme show cost is an important factor for IT within participant organisations. Based on these findings, the researcher concludes IT plays a utility role within the participant organisation, as per the finding of Gingras (Gingras, 2006). Regarding categorisation, the ***value chain augmentation*** and ***adaptive capacity*** sub-themes show the existing business models are still profitable, and the IT skill set, within participating organisations, is not yet ready for a CC adoption. Drawing comparisons to the study by Zhou and Wu (Zhou & Wu, 2010) the researcher concludes IT enables participating organisations to explore new products and services.

5.2.3. Business and IT Strategic Alignment

Strategic alignment between business and IT is important within an organisation. In this study, the ***cost structure*** sub-theme shows the existing structures within the participating organisations are hindering business from responding to external changes in the target market. Coupled with this, the ***technology-architecture-review*** sub-theme illustrates the participating organisations focus on ensuring their infrastructure remains stable and reliable. On the other hand, the ***customer experience*** sub-theme highlights the change in customer behaviour, given the availability of cloud-based solutions. When drawing comparisons with the study findings of Henderson et al. (1996), this study finds participating organisations implement their strategic alignment model using the service-level method. The service-level method is due to the focus of participant organisations on stability and reliability, and less about effective usage of CC capabilities.

5.2.4. Cloud Computing Strategies

The literature review, in this study, shows CC strategies can take various forms. The ***value-chain-augmentation*** sub-theme identifies SaaS-based solutions as a key driver to accelerate the business strategy realisation, which is similar to the findings of Gonçalves and Ballon (2011). However, this study finds SaaS-based solutions is only providing an accelerated time-to-market of proof-of-concept business ventures and not the total-cost-of-ownership benefit as Gonçalves and Ballon (2011) shows.

5.2.5. Organisational Impact

Preparing the organisation to adapt to CC is an important factor. This study finds the organisation, excluding the IT department, is ready to adopt CC, which contradicts the study by Akande and Van Belle (2014) who shows the financial services sector readiness level is low. Within the participating organisations, the IT department is the hindrance towards adopting CC. This hindrance results from the IT department focusing on the stability and reliability of the existing infrastructure at the cost of flexibility and reduced time-to-market, of new business initiatives. These characteristics of the internal IT department force the rest of the organisation towards CC. Consequently, preparing the organisation relates more to preparing the IT department to adopt CC.

Business models are vital to determine how an organisation intends creating and delivering a value-added service to a target market. The ***value-chain-augmentation*** sub-theme shows the existing business models of the participating organisations, is still profitable and not impacted by CC. Even the new competitors entering the market and substitute products introduced into the market does not pose a threat to the participating organisations. Therefore, the findings of this study contradict Tongur and Engwall (2014) and McGrath (2010) who shows changes in technology pose a threat to organisations and reinforces an organisation should experiment with their business model.

Organisational agility determines how well the organisation can adapt to unplanned changes in their business environment. This study finds participating organisations are optimising their internal processes to ensure the organisation can adopt CC. None of the data findings shows the participants focus on market capitalisation, as a result of CC, which is rooted in the view that CC pose no threat to their business. The present study concludes the participating organisations are not agile, based on the findings of Lu and Ramamurthy (2011) and Chakravarty et al. (2013).

Organisational fit plays an important role when considering the suitability of CC, for participating organisations. From this study, the ***business viability*** sub-theme shows the business units, of participating organisations, adopt CC to enable business processes. In contrast, the ***technology-architecture-review*** sub-theme show organisations regard CC as adopted when integrated into the larger organisational infrastructure. The study of Strong and Volkoff (2010), categorise the organisational suitability of an IT solution into enablement and coverage. However, the data findings show CC provides enablement but does not always fulfil the coverage requirement for organisational fit.

Management plays a vital role within the organisation to ensure the execution of the business strategy. Through the ***adaptive capacity*** sub-theme, the findings show managers need to handle the impact on staff when adopting CC. On top of that, the ***vendor influence*** sub-theme highlights the factors in a vendor relationship which managers should concern themselves about. Though the study by Bhatt et al. (2010) highlights the requirement of change-management, the focus is on the technology and not the business impact. In contrast, this study identified factors, which managers within participant organisations have to deal with to handle the organisational change.

5.3. Discussion Matrix

Based on the discussion in sections 5.1 and 5.2 this study took the highlighted findings in each section and compiled a matrix of the discussion points. The purpose of this matrix is to summarise the discussion points, in a shorter version. In the matrix, the columns are Themes from Literature Review, Business Factors, Support CC, and Impede CC. Themes from literature review contain the themes from the literature review in this study. The business factors column represents discussion conclusion relating to business strategy. The support CC column lists the discussion comments which supports moving to CC, while the impede CC list all discussion comments inhibiting a move to CC.

Themes from Literature Review	Business Factors	Support CC	Impede CC
Frameworks and Models			
Business Strategy			
IT Strategy		A framework should be adopted to prepare the organisation for CC	
Business and IT Alignment	Adopting the Bi-modal framework enables the organisation to respond to business needs.		
CC Strategies			
Organisational Impact			
Customer Experience			
Business Strategy	Flexibility to work anywhere and anytime Customer base still prefers face-to-face interaction	CC is a catalyst to compel organisations to re-evaluate their product offering	
IT Strategy			

Themes from Literature Review	Business Factors	Support CC	Impede CC
Business and IT Alignment		CC has been a catalyst for changes in customer behaviour	
CC Strategies			
Organisational Impact			
Value Chain Augmentation			
Business Strategy	Within the South African context, CC does not impact strategic position CC is viewed as an enabler and does not influence their competitive advantage	Implementation of proof-of-concept ideas	CC has not affected the profitability of existing business models.
IT Strategy	Existing business models have remained profitable		
Business and IT Alignment			
CC Strategies		SaaS-based solutions only provide an accelerated time-to-market for proof-of-concept business ventures	No total-cost-of-ownership benefit, given the final solution is built on the internal infrastructure

Themes from Literature Review	Business Factors	Support CC	Impede CC
Business Viability			
Business Strategy	Substitution products offered through CC is a niche compared to the boutique of products offered by the large organisation	Accelerates time-to-market	CC is viewed as either operational or tactical
IT Strategy			
Business and IT Alignment			
CC Strategies			
Organisational Impact	CC is only adopted to enable business processes CC can provide enablement but not coverage when using the organisational suitability lens		Operational disruption is a concern for organisations
Cost Structure			
Business Strategy	CC can minimise operational cost but does not contribute towards business profitability Optimise organisational infrastructure		

Themes from Literature Review	Business Factors	Support CC	Impede CC
Business and IT Alignment			
CC Strategies			
Organisational Impact	Existing cost structure hinders responses to external market changes		Cost-models favour internal infrastructure
Adaptive Capacity			
Business Strategy	CC adoption raises concerns regarding the readiness of the IT department.	Educating executive managers about CC	
IT Strategy	IT skill sets within organisations is not ready to adopt CC		
Business and IT Alignment			
CC Strategies			
Organisational Impact	Managers need to handle the impact on staff		Consideration is required for legacy financial products and legacy IT systems.
Technology Architecture Review			
Business Strategy	Defend current market position by optimising organisational infrastructure		

Themes from Literature Review	Business Factors	Support CC	Impede CC
Business and IT Alignment			
CC Strategies			
Organisational Impact	CC is only adopted if it is integrated into the larger organisational infrastructure	Internal processes are optimised in preparation for adopting CC	IT departments focus on the stability and reliability of the existing infrastructure at the cost of flexibility and reduced time-to-market, of new business initiatives
Vendor Influence			
Business Strategy	Vendor relationship influences the adoption of CC.The vendor can force organisations to adopt CC		
IT Strategy			
Business and IT Alignment			
CC Strategies			
Organisational Impact	Vendor relationships should be carefully considered		

Table 16. Discussion Matrix

Based on the above table the discussion matrix can be summarised by addressing Business Factors, Support CC, and Impede CC.

5.3.1. Conclusions from Discussion Matrix

Business factors highlight the consideration South African investment services organisations take when addressing CC. The discussion shows how CC influence the strategic thinking of participants given the catalyst CC has been for capabilities the organisations are considering. However, CC itself is not a differentiator for participants and therefore does not influence their strategic position or strategic mode of operation. However, change management plays a vital role and should form part of the strategic execution when the organisation adopts CC.

Support CC provides a summary of considerations that South African investment services organisations take when adopting CC. SaaS-based solutions provide an accelerated time-to-market for proof-of-concept business ventures and to a lesser degree provide a reduced total cost of ownership. Participants of this study had this view because the final solution is built onto the existing organisational infrastructure. Participating organisations are also optimising their internal processes to ensure the organisation can adopt CC.

Impede CC looked at the factors, which prevents South African investment services organisations from adopting CC. Participating organisations have remained profitable, using their existing business models. Operational disruption is another concern to South African organisations, and this is based on CC being viewed as either operational or tactical, but not strategic. The South African investment services organisations also have legacy financial services products, which they need to maintain on their legacy IT systems. Given, the cost model within the participating organisations, this creates a barrier towards CC and moving off this legacy IT systems. Business and IT alignment are also achieved through a service-level method, which forces the IT department to focus on optimising the stability and reliability of the infrastructure at the cost of flexibility and reduced time-to-market, of new business initiatives.

None of the data findings shows how the participants focus on market capitalisation. The lack of market focus, regarding CC, is rooted in CC not posing a threat to their business, and their existing business models are still profitable and not affected by CC.

5.4. Relationship Matrix

The purpose of the relationship matrix is to show how CC relates to business strategy factors. Compiling this matrix entails revisiting the discussion matrix, and labelling the types of relationships that exist.

The researcher, to make sense of the data, creates four relationship types namely, Business Consideration, Support (strong), Support (weak), and Impede. *Business consideration* relationship-type represents business factors and indicate the relationship neither supports nor impedes CC. It only provides input into business strategy formulation. The *Support (strong)* relationship-type indicates the relationship strongly supports CC. The *Support (weak)* relationship-type indicates the support to adopt CC is weak. The *Impede* relationship-type indicates a barrier towards CC.

The process of assigning these relationship types consists of reading each line in the discussion matrix and assigning a relationship type, per row. Each row is assigned one relationship type. When a row contains more than one column with comments, these comments merge into one. The researcher then assigns a relationship type to the row, based on the merged comment. In the final relationship matrix, the columns represent the sub-themes from the data findings, and each row represents a theme from the literature review.

Themes	Business Strategy	IT Strategy	Business and IT Alignment	CC Strategies	Organisational Impact
Frameworks and Models		Support (strong)	Business Consideration		
Customer Experience	Business Consideration		Support (weak)		
Value Chain Augmentation	Business Consideration	Support (weak)		Support (weak)	Impede
Business Viability	Business Consideration				Business Consideration
Cost Structure	Impede	Impede			Impede
Adaptive Capacity	Impede	Impede			Business Consideration
Technology Architecture Review	Business Consideration	Impede			Impede
Vendor Influence	Business Consideration				Business Consideration

Table 17. Relationship Matrix

5.4.1. Conclusions from Relationship Matrix

Based on the relationship matrix this section discusses the relationships by first considering it by each row and then by each column. This translates into first describing the relationship between the literature-based themes. The second description discusses, the relationship based on the themes from the data findings.

The literature-based relationships consider Business Strategy, IT Strategy, Business and IT Alignment, CC Strategies, and Organisational Impact. ***Business Strategy*** has a predominant "business consideration" relationship-type, which means organisations only considers the effect of CC as input to their business strategy decision. However, CC does not drive their business strategy for the organisation. ***IT Strategy*** has mostly an "impede" and "support (weak)" relationship-type, which is rooted in CC being regarded as either operational or tactical. ***Business and IT Alignment*** has both a "business consideration" and "support weak" relationship-type. This implies CC provides input into business strategy, but the relationship is not strong enough to influence the alignment between business and IT. ***CC Strategies*** only has a "support (weak)" relationship-type because CC does not provide any business value to the organisation. ***Organizational Impact*** has a "business consideration" and "impede" relationship-type. Given the complexity of large organisations, this means CC provides input into business strategy, but the impact of CC on the organisation creates a barrier for CC into the organisation.

The data findings sub-theme relationships consider Frameworks and Models, Customer Experience, Business Viability, Cost Structure, Adaptive Capacity, Technology Architecture Review, and Vendor Influence. ***Frameworks and Models*** has a "business consideration" and "support (strong)" relationship-type, which means this sub-theme can provide a positive impact on the organisation and adoption of CC. ***Customer Experience*** has a "business consideration" and "support (weak)" relationship-type. This means that even though CC provides input into the business strategy, it does not assist the organisation with alignment between business and IT. ***Value Chain Augmentation*** has a predominantly "support (weak)" and "impede" relationship-type, which means CC does not provide a strong input into business strategy. ***Business Viability*** only has a "business consideration" relationship-type, which means CC only provides input into business strategy. ***Cost Structure*** only has an "impede" relationship-type, which means the business strategy creates a barrier for CC to enter the organisation. ***Adaptive Capacity*** has a "impede" and "business consideration" relationship-type, which means the organisation will consider the CC input into its business strategy

formulation. However, the input provided will not lower the barrier of entry into the organisation for CC. ***Technology Architecture Review*** also has an "impede" and "business consideration" relationship-type. Here the "impede" relationship-type shows the organisation has barriers to entry for CC based on the existing IT strategy and potential organisational impact introduced by CC. ***Vendor Influence*** only has a "business consideration" relationship-type because vendors are trusted partners, and when considering CC the business strategy should consider the existing vendor relationships.

5.5. Summary of Chapter

This chapter has set out to discuss the data findings. The discussion starts by unpacking the research topic and drawing comparisons between the data findings and the various areas of the research topic. Following this comparison, the various themes, which emerged from the literature review, are revisited to discuss any relationship with the data findings. These two comparisons prepare the introduction of the discussion matrix.

The purpose of the discussion matrix is to provide a bird's eye view of the discussion in the previous two sections. Some conclusions are drawn from the discussion matrix regarding the relationships between CC and business strategy. This discussion matrix lays the foundation for the relationship matrix. Here four relationship types provide a clearer description of the relationship between CC and business strategy.

6. Conclusion

This research aims to describe and explain the business strategy factors, which either support or impede moving business capability to a CC environment. The literature review starts by understanding CC and looking at the various business strategy factors. Here the business factors include industry structures, the strategic position of organisations, the strategic mode in which the organisation operates, and the strategy execution an organisation implements. Some background on IT strategy looks at the role of IT and strategic alignment of IT and business. Later, some existing literature provides insight on how IT and CC strategies influence an organisation.

Data collection entails using semi-structured interviews, within large organisations. The requirement for these organisations is that they already invested in a large infrastructure, which they own. This investment provides a view of the factors such organisations have to consider when moving business capabilities to a cloud environment. All the participants influence the organisation's business strategy and provide insight on whether CC has a role in business strategy decisions.

Data analysis triangulates the interviews with the integrated reports, which the organisations produce on an annual basis. There are eight empirical sub-themes from the data analysis, which includes Frameworks and Models, Customer Experience, Value Chain Augmentation, Business Viability, Cost Structure, Adaptive Capacity, Technology Architecture Review, and Vendor Influence. These are the sub-themes, which all participants considered when performing business strategy or deciding to adopt CC. A discussion follows by decomposing the research topic into various components and describing the relationship between CC and business strategy.

The remainder of this chapter will present a review of the findings and discusses how the present study has achieved its objectives. Following this, the chapter discusses the research contribution, recommendations, and research limitation.

6.1. Review of Findings

The present study seeks to understand whether there is any relationship, which exists between the business strategy of an organisation and the CC options available. By setting an objective, the research aims to achieve its goal. The objective is to describe the role and potential of cloud computing, and its relationship to business strategy in the South African investment industry. This objective is now discussed in the rest of this section.

6.1.1. Describe the role and potential of cloud computing, and its relationship to business strategy in the South African investment industry

This research finds SaaS-based solutions are the most used CC option. Contemporary business environments are competitive, and organisations are considering ways to explore products and services. The SaaS-based solutions accelerate the time-to-market for proof-of-concept products and services. However, most implementations of the final business solution are on the internal infrastructure of the organisation. PaaS and IaaS are used to a lesser degree by organisations in this study.

The business strategy consists of industry structure, strategic mode, strategic position, and strategic execution. Organisations also have an IT strategy and need to align the IT strategy with the business strategy. CC influences the strategic thinking of participants given the catalyst CC has been for capabilities the organisations are considering. However, CC offers no competitive differentiation for investment services organisations, and their existing business models have remained profitable. Even so, organisations are still looking at optimising their internal processes to ensure the organisation can adopt CC.

IT is a utility service in most organisations, which enables the organisation to explore new products and services. Organisations, therefore, has a service-level relationship with IT to align IT strategy to business strategy. This forces the IT department to focus on maintaining a stable and reliable infrastructure. A relationship, which forces the IT department only to consider CC when it contributes to the service level. Misalignment then follows, and individual business units adopt CC, in isolation, to fulfil their business need. Managers need to consider these factors when guiding the organisational change.

6.2. Research Contribution

Prior research focuses on CC capabilities and technical issues surrounding it. Most prior research in CC takes the perspective of the cloud provider, and not the cloud consumer. Little CC based research considers the business perspective towards understanding the role CC plays, within the business context of the organisation. The focus in the present study is on the business strategy aspects of an organisation and its relationship with CC. It considers the CC capabilities and the value-added contribution to the business. Specific focus is on business strategy factors and the relationship CC has with the strategic position, mode, execution, and industry structures of an organisation. An assessment is made of the impact CC has on each of these business strategy factors and how those impacts support or impede moving business capability to CC. To achieve this, the study used a matrix to describe the relationship between CC and business strategy. This matrix is named the relationship matrix. The research contribution is the description of the relationships, which exist between the business strategies of South African investment service organisations and CC.

6.3. Recommendations

From a business strategy point of view, the organisation should recognise the industry-structure impact CC has on their customer experience. By clearly identifying the customer types the organisation intends of serving, the organisation can focus on identifying the expected customer experience. Organisations need to start preparing their IT infrastructure by adopting a suitable framework. Even though there are different frameworks and models, followed by organisations, they need to focus on first getting one right. The researcher recommends an organisation place focus on implementing the bimodal IT strategy to separate the needs of the legacy infrastructure from the rest of the IT infrastructure. This separation caters to the ever-changing needs of the business environment.

6.4. Research Limitations

A limitation of the present study relates to the ability of the researcher to source literature concerning the business strategy contribution of CC. Further research, therefore, should explore this. Also, the present study interviews only a small number of organisations owning a data centre. This small population size is in part because the study is limited to investment services. Future studies should consider other industries to draw comparisons to the present study. The role of the person interviewed should extend to include non-IT roles, such as chief executive officers or chief financial officers. This extension is required because technical executives steer the conversation in a more technical direction as appose to the business aspects.

7. References

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8. Appendix

8.1. Ethics Form

UNIVERSITY OF CAPE TOWN

FACULTY OF COMMERCE

Igniting Knowledge and Opportunity

Any person planning to undertake research in the Faculty of Commerce at the University of Cape Town is required to complete this form **before collecting or analysing data**. If any of the questions below have been answered YES, and the applicant is NOT an Honours student, the form it should be submitted to the supervisor (where applicable) and from there for approval by the Faculty EIR committee: Ms Samantha Alexander (**samantha.alexander@uct.ac.za).**

It is assumed that the researcher has read the UCT Code for Research involving Human Subjects (Available at http://web.uct.ac.za/depts/educate/download/uctcodeforresearchinvolvinghumansubjects.pdf) in order to be able to answer the questions in this form.

Students must include a copy of the completed form with the dissertation/thesis when it is submitted for examination.

1. PROJECT DETAILS			
Project title:			
Principal Researcher/s:	Faghmie Jamiel Davids	Email address(es):	faghmie@gmail.com
Research Supervisor:	Jean-Paul Van Belle	Email address(es):	jean-paul.vanbelle@uct.ac.za

Co-researcher(s): N/A	Email address(es):	N/A
Department: Commerce (IS)		
Brief description of the project: Understanding business strategy factors that support or impede moving business capabilities to a cloud environment		
Data collection: (please select) ☒Interviews ☐Questionnaire ☐Experiment ☐Secondary data ☐Observation ☐ Other (please specify): _____		
Have you attached a research proposal OR a literature review with research methodology? (please select) ☒Yes ☐No		
• 2. PARTICIPANTS		

2.1 Does the research discriminate against participation by individuals, or differentiate between participants, on the grounds of gender, race or ethnic group, age range, religion, income, handicap, illness or any similar classification?	YES	NO X
2.2 Does the research require the participation of socially or physically vulnerable people (children, aged, disabled, etc.) or legally restricted groups?	YES	NO X
2.3 Will you be able to secure the informed consent of all participants in the research? (In the case of children, will you be able to obtain the consent of their guardians or parents?)	YES	NO X
2.4 Will any confidential data be collected or will identifiable records of individuals be kept?	YES	NO X
2.5 In reporting on this research is there any possibility that you will not be able to keep the identities of the individuals involved anonymous?	YES	NO X
2.6 Are there any foreseeable risks of physical, psychological or social harm to participants that might occur in the course of the research?	YES	NO X
2.7 Does the research include making payments or giving gifts to any participants?	YES	NO X

If you have answered **YES to any of these questions**, please describe how you plan to address these issues (append to form):

Affiliations of participants: (please select)

☒Company employees ☐Hospital employees ☐General public ☐Military staff ☐Farm workers ☐Students

☐ Other (please specify): _____

Race / Ethnicity:

Are you asking a question about race/ethnicity in your questionnaire?

☐ Yes ☒ No

Which race categories have been used?

Not Applicable

Have you included the option: “Prefer not to answer” as part of your race/ethnicity question?

No

- 3. Provision of Services

Does your research involve the participation of or provision of services to communities? NO

If your answer is YES, please complete below:

3.1 Is the community expected to make decisions for, during or based on the research?	YES	NO

3.2 At the end of the research will any economic or social process be terminated or left unsupported, or equipment or facilities used in the research be recovered from the participants or community?	YES	NO
3.3 Will any service be provided at a level below the generally accepted standards?	YES	NO

If you answered YES to any of these questions, please describe below how you plan to address these issues.

- 3. ORGANISATIONAL PERMISSION

If your research is being conducted within a specific organisation, please state how organisational permission has been/will be obtained:

A formal email will be send to the participant requesting permission to conduct the interview.

Have you attached the letter from the organisation granting permission? (please select)

☐ Yes ☒ No, but this **will be** obtained before commencing the research ☐ Not applicable

Are you making use of **UCT students** as respondents for your research? (please select) ☐ Yes ☒ No

If yes, have you contacted Executive Director: Student Affairs for permission? (please select) ☐ Yes ☐ No

Was approval granted? (please select) ☐ Yes ☐ No ☐ Awaiting a response

Are you making use of **UCT staff** as respondents for your research? (please select) ☐ Yes ☒ No

If yes, have you contacted Executive Director: Human Resources for permission? (please select) ☐ Yes ☐ No

Was approval granted? (please select) ☐ Yes ☐ No ☐ Awaiting a response

Contact Emails: Executive Director: Human Resources (**Miriam.Hoosain@uct.ac.za)**

Executive Director: Student Affairs (**Moonira.Khan@uct.ac.za)**

- 4. INFORMED CONSENT

What type of consent will be obtained from study participants?

☑ Oral Consent

☑ Written Consent

☐ Anonymous survey questionnaire (covering letter required , no consent forms needed)

☐ Other (Please Specify)

How and where will consent/permission be recorded? Email or Formal One-Page Document or Voice Recordings

Have you attached an informed consent form to your application? ☐ Yes ☒No

- 5. SponsorShip of Research

If your research is sponsored, is there any potential for conflicts of interest? Research is not sponsored

If your answer is YES, please complete below

4.1 Is there any existing or potential conflict of interest between a research sponsor, academic supervisor, other researchers or participants?	YES	NO
4.2 Will information that reveals the identity of participants be supplied to a research sponsor, other than with the permission of the individuals?	YES	NO
4.3 Does the proposed research potentially conflict with the research of any other individual or group within the University?	YES	NO

If you have answered **YES** to any of these questions, please describe how you plan to address these issues (append to form)

- 6. RISK TO PARTICIPANTS

Does the proposed research pose any physical, psychological, social, legal, economic, or other risks to study participants you can foresee, both immediate and long range? (please select)

☐ Yes ☒ No

If yes, answer the following questions:

1. Describe in detail the nature and extent of the risk and provide the rationale for the necessity of such risks

1.

2.

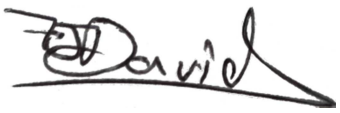
3.

I certify that I have read the the Commerce Faculty Ethics in Research policy (http://www.commerce.uct.ac.za/Pages/ComFac-Downloads) ☒

I hereby undertake to carry out my research in such a way that

- there is no apparent legal objection to the nature or the method of research; and
- the research will not compromise staff or students or the other responsibilities of the University;
- the stated objective will be achieved, and the findings will have a high degree of validity;
- limitations and alternative interpretations will be considered;
- the findings could be subject to peer review and publicly available; and
- I will comply with the conventions of copyright and avoid any practice that would constitute plagiarism.

Signed by:

	Full name and signature	Date
Principal Researcher/Student:	Faghmie Jamiel Davids 	04 April 2017

This application is approved by:

Supervisor		
HOD (or delegated nominee – for all Honours Projects):		
Chair: Faculty EIR Committee (only for postgraduate research at Master and PhD		

level)		

CHECKLIST	SELECT
A full copy of a research proposal or a literature review with methodology is attached in a separate file	☒
Interview schedules / cover letters / questionnaires / forms and other materials used in the study are attached in separate files	☒
Organisational consent letter / UCT student or staff approval letter	☐
On your cover letter to your questionnaire have you included the following?	NA ☐
1. The following UCT Logo 	☐
2. A sentence explaining the aim of the research	☐
3. Sentences of a similar nature to below must be included in the cover letter or consent form:	
This research has been approved by the Commerce Faculty Ethics in Research Committee.	☐
Your participation in this research is voluntary. You can choose to withdraw from the research at any time.	
The questionnaire will take approximately X minutes to complete	☐

You will not be requested to supply any identifiable information, ensuring anonymity of your responses. Due to the nature of the study you will need to provide the researchers with some form of identifiable information however, all responses will be confidential and used for the purposes of this research only. Should you have any questions regarding the research please feel free to contact the researcher (insert contact details). 4. Have you scanned in your signature for the last section of the form?	☐ ☐ OR ☐ ☐ ☒

8.2. Research Introduction Letter

Dear Participant,

I would like to invite you to participate in a research study entitled: ***Understanding business strategy factors that support or impede moving business capabilities to a cloud environment***. I am currently enrolled in the master's in Commerce (Information Systems) at the University of Cape Town and am in the process of writing my master's thesis.

My research aims to understand the relationship that might exists between the various business strategies an organisation may undertake, and a specific cloud computing option.

Cloud computing could require a paradigm shift in the method of IT delivery, thus challenging traditional IT management issues. Given this, it is suggested that research is performed asking questions such as: "How does cloud computing impact current practices of IT management and governance? Does cloud computing improve IT business alignment and IT agility? What are the critical factors of a successful business model with cloud computing?" Research found that an organisation requires a strategy for the cloud. Organisations are required to recognise the strategic driver, the impact on business models, and finally, new skill sets that will be required from people within the organisation.

If you have any questions about this project, feel free to contact *Mr Faghmie Davids* at *faghmie@gmail.com (email)* OR *076 412 9225 (cellphone)*. Information about the ethics policy of the Commerce faculty is available through the website: http://www.commerce.uct.ac.za/Downloads/Faculty%20Ethics%20in%20Research%20Policy.PDF.

Thank you for your assistance in this important endeavour.

Sincerely yours,

Faghmie Davids

8.3. Email Template Requesting Participation

Good morning *[name of participant]*,

My name is Faghmie Davids, and I got your details from *[name of reference]*, who *[explaining relationship]*.

I'm busy completing my master's in IS, and I need to interview industry leaders as part of my data collection process.

Do you think you could spare me an hour to talk about cloud computing in your environment?

If you are available, can you please indicate which morning you can accommodate me?

Just some context around my thesis.

I am currently enrolled in the master's in Commerce (Information Systems) at the University of Cape Town and am in the process of writing my master's thesis.

My research study is entitled:
Understanding business strategy factors that support or impede moving business capabilities to a cloud environment.

It aims to understand the relationship that might exist between the various business strategies an organisation undertake, and a specific cloud computing option.

Thanks & Regards,
Faghmie Davids
(c) 076 412 9225

8.4. Interview Guideline

Based on the literature review of this study, the following categories of questions will be considered:

1. Understanding the person
    a. What position do you hold within your organisation?
    b. How long have you been with the organisation?
    c. What role do you play when a strategy is decided by the organisation?

2. Organisational Strategy
    a. What role can cloud computing play given your strategic position?
    b. To what extent can cloud computing be utilised to execute your strategic, operational, and tactical solutions?

3. Cloud Characteristics

    Background

The NIST has defined the following characteristics, which a cloud computing solution would need to consist of:

- On Demand
- Resource Pooling
- Broad Network Access
- Measured Services
- Rapid Elasticity

    a. What impact has the characteristics of cloud have on your industry structures?
        i. What cloud characteristics have you applied to ensure you can grab the attention of the younger generation, who might be looking for substitution products?
        ii. What effect has this had on your strategic position within your industry?
        iii. Given this position, what strategy type did/are you applying?

4. Deployment Models

Background

Cloud computing can be delivered using any of the known models, namely; Private, Public, Hybrid, or Community. A (2015) study found that the hybrid delivery model, which is a combination of the private and public cloud delivery model, contributed the most towards organisation performance. This performance can be achieved by using the public cloud for carefully chosen low-risk workloads and using the private cloud for applications and data, which are more sensitive towards data losses or outages. The available cloud models are:

a. What business process are you planning to implement hybrid cloud models to spread any over or under resource capacity, you may be experiencing.
    i. What impact has these models have regarding integration with your vendors, to (for example) limit the impact of new entrants to your market?
    ii. What form of competitive advantage does this provide you with?
    iii. What role does/can these deployment models play, during your strategy execution?

5. Infrastructure as a Service (IaaS)

Background

To understand the strategic contributions of IaaS, it helps to understand the different dimensions of benefits associated with IaaS. A (2012) study categorised IaaS into six different dimensions namely;

- Flexibility
- Cost
- IT Security & Compliance
- Reliability & Trustworthiness
- Scope and Performance
- Service and Cloud Management

a. What impact has/can IaaS have on your service agreements with your vendors?
    i. Which aspects of IaaS are most important and will reduce your switching cost to or between vendors?
    ii. What impact does this have on your operational execution?

6. Software as a Service (SaaS)

Background

A (2011) study in Software as a Service provides the organisation two distinct advantages, namely; Total cost of ownership and Data Sharing. ***Total cost of ownership*** of the particular software package is reduced since the organisation does not require any development investment nor an IT competency to maintain the given software. ***Data sharing*** can be achieved when the SaaS vendor provides the capability to share data among different SaaS type applications.

a. What role does SaaS play, when considering to extend your business footprint into new market territories?
    i. What role does SaaS play in your strategic position, given that competitors could have a smaller barrier to entry regarding IT software requirements and potential licensing?
    ii. How are you using the reduced IT investment required by SaaS to minimise the risk of substitution products/services taking some of your market share?

7. Platform as a Service (PaaS)

Background

Platform as a Service enables an organisation to develop an application and then deploy it into an environment that will take care of executing the application smoothly. The organisation only needs to concern itself with creating value-add features and monetising from the application. The PaaS model will facilitate any technical requirements of the application, and make available to the application any cloud computing services that would be required (Gonçalves & Ballon, 2011).

a. How does it minimise your risk of long-term commitments to a single technological platform?
    i. What impact does this have to allow your organisation to ensure that you only focus on creating value adding features?

8.5. Coding screenshot and extract

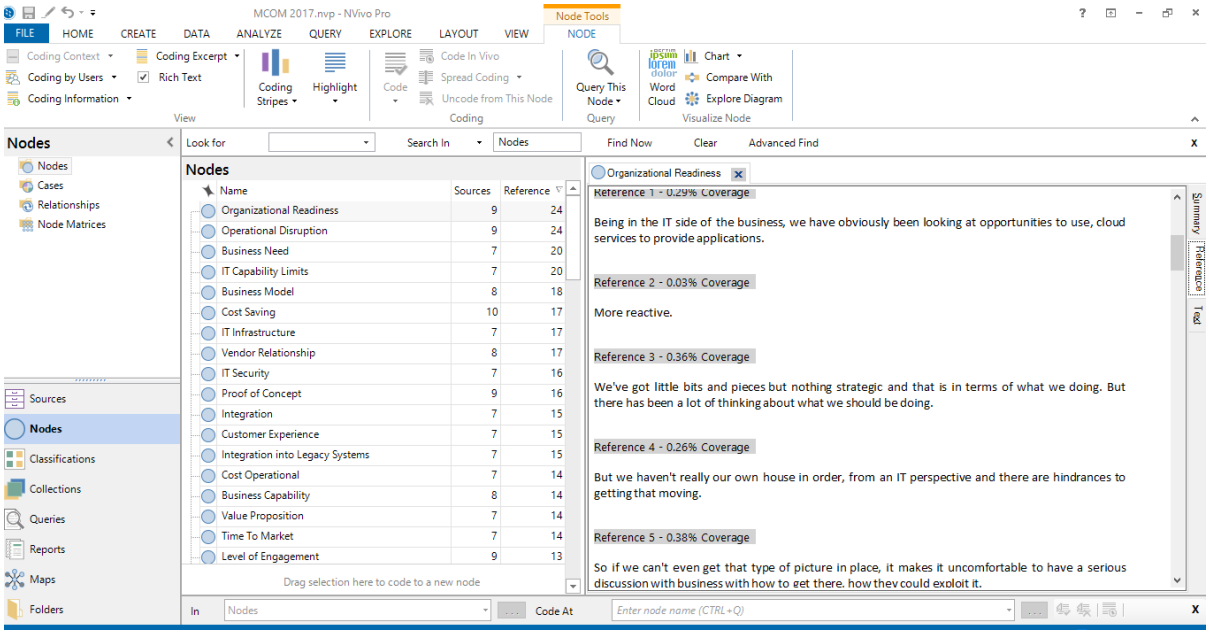


Figure 6. Sample Coding in Nvivo

8.5.1. Export of code list

Name	Sources	References
Business Capability	8	14
Business Model	8	18
Business Need	7	20
Cloud Policy	5	11
Collaboration	6	10
Competitors (Existing)	5	6
Competitors (New Entrants)	8	10
Cost Model	4	6
Cost of Development	5	8
Cost Operational	7	14
Cost Saving	10	17
Cost Sunken	3	6
Customer Behavior	6	13
Customer Experience	7	15

Name	Sources	References
Customer Type	6	6
Differentiation (Lack Of)	8	11
Differentiation (using Commodity Software)	7	13
Digital Offering	5	5
Due Diligence	3	4
Forced Commercial Engagement	6	10
Implementation Model	7	10
Integration	7	15
Integration into Legacy Systems	7	15
IT Capability Limits	7	20
IT Infrastructure	7	17
IT Migration	4	8
IT Security	7	16
Legislative Impact	5	10
Level of Control	4	7
Level of Engagement	9	13
Operational Disruption	9	24
Organizational Culture	6	8
Organizational Politics	3	6
Organizational Readiness	9	24
Proof of Concept	9	16
Risk (Organizational Reputation)	5	5
Role Player	3	3
Standardization	4	5
Time To Market	7	14
Value Proposition	7	14
Vendor Hosted Services	7	12

Name	Sources	References
Vendor Lock-In	5	7
Vendor Relationship	8	17

Table 18. List of Code Exports from Nvivo